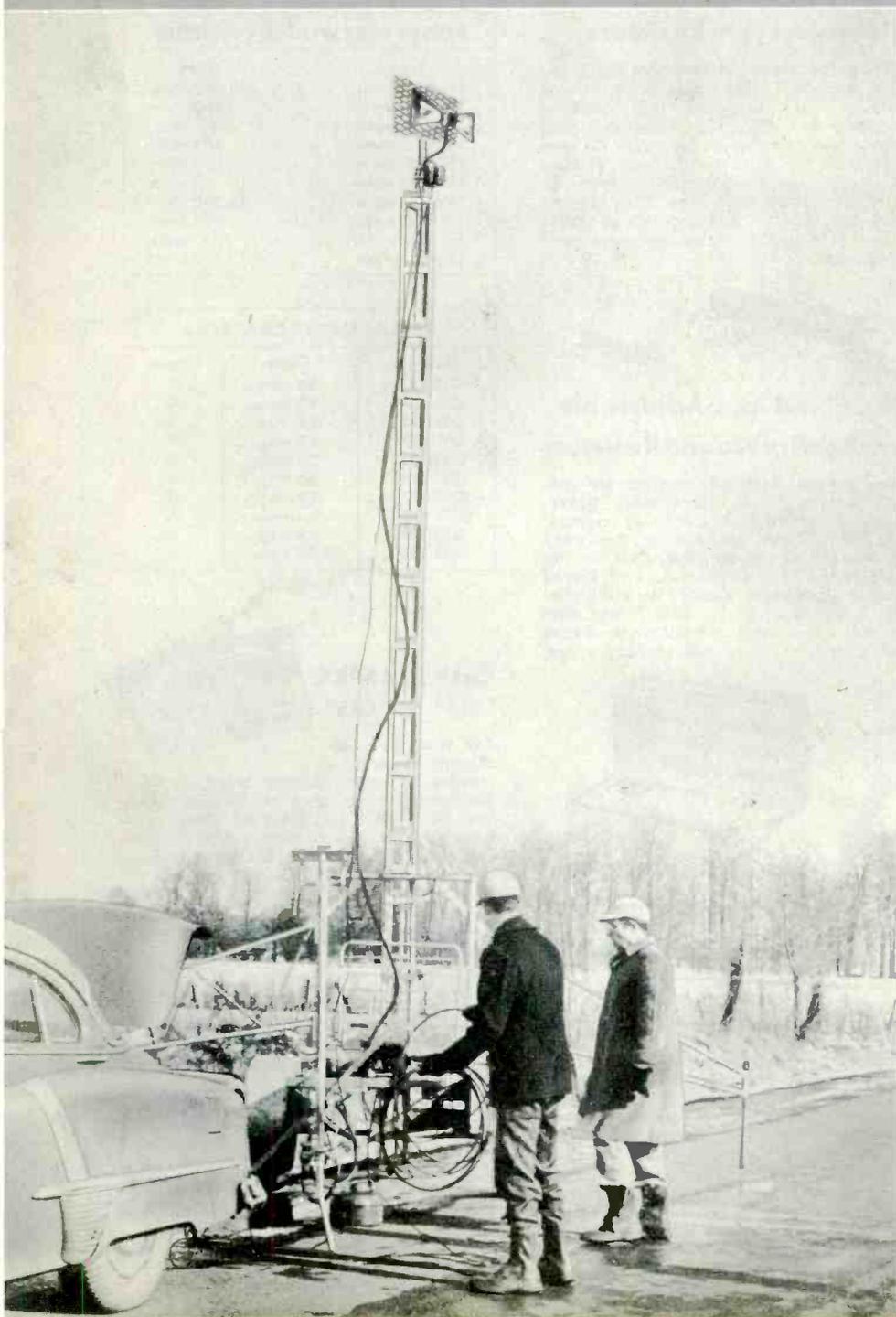


Lawrence W. Sams



INDEX

AND TECHNICAL DIGEST



March • April • 1953
including
INDEX No.
37
COVERING PHOTOFACT
FOLDER SETS 1 THRU 200

CONTENTS

Shop Talk	
<i>Milton S. Kiver</i>	5
Operation UHF	
<i>W. William Hensler</i>	9
Which Antenna for UHF?	
<i>C. P. Oliphant and Glen E. Slutz</i>	21
UHF Lead-ins	
<i>W. William Hensler</i>	27
Use of UHF Converters	
<i>Merle E. Chaney</i>	31
UHF Strip Installation	
<i>W. William Hensler</i>	35
UHF Tuner Kit Field Installation	
<i>Merle E. Chaney and W. William Hensler</i>	39
Audio Facts	
<i>Robert B. Dunham</i>	43
Dollar and Sense Servicing	
<i>John Markus</i>	49
Photofact Cumulative Index	
No. 37 Covering PHOTOFACT	
Sets Nos. 1-200 Inclusive	51
Status of TV Broadcast Operations	
Western States	118
Mid Western States	119
Central States	121
North Eastern States	122
South Eastern States	123
CP's Granted In Feb. 1953	117
TV Station Channel Shifts	117
+ More or Less	126

HOW TO PLAN FAST-MOVING INVENTORIES AND REDUCE OBSOLESCENCE WITH IRC "BEST SELLERS"



Why Tie-up Your Money in Stagnant Stocks?

Resistors on your shelves won't bring you a cent—until you put them to use. If they're lazy movers they tie-up your money and your shelf space. And if they're shelf-squatters—gathering dust month after month until they become obsolete—they're actually money wasted. Yet a lot of servicemen continue to stock slow-moving parts because they haven't thought about the advantages of IRC "Best Seller" Resistors and Controls.



For Fast Stock Turnover Invest in IRC "BEST SELLERS"

It's just as easy—easier in fact—to stock fast-moving, money-making parts as it is to load up with shelf-squatters. And it's certainly a lot more profitable. All you have to do is tell your Distributor's salesman that you want a realistic, commonsense inventory based on IRC "Best Sellers". He'll know what you mean, because ten-to-one your Distributor's own inventory is based on those very fast-moving parts.



What Do We Mean by "BEST SELLERS"?

"Best Seller" Resistors and Controls are those you use most often in radio and TV servicing. They're the indispensables—the ones you'll want on hand at all times. Of course there are others you'll need on occasion. But the great majority of parts essential in radio and TV divides into relatively few classifications regardless of brands or models of sets. Although IRC makes resistors and controls for every replacement need, careful analysis shows the greatest movement among a limited number of types and ranges. These "Best Sellers", listed here, provide a realistic base for establishing your parts inventory.



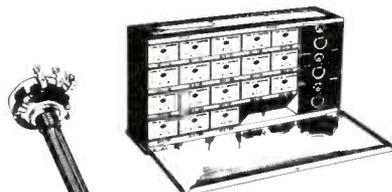
IRC Advanced BT Filament Type Resistors

In television sets you'll find more IRC Type BT's than any other types or makes of resistors. Fully insulated, they combine extremely low operating temperature and superior power dissipation. Not only do they easily meet the stiff requirements of television, they also *beat* Army-Navy Specifications in most characteristics. IRC supplies Advanced Type BT Resistors in a complete variety of ranges and sizes to meet every servicing need.



IRC Fixed and Adjustable Power Wire Wound Resistors

These rugged, long-life resistors are specially engineered for dependable heavy-duty performance. Unlike ordinary resistors, IRC PWW's need no derating; they carry full wattage in any range. Special coating gives faster heat dissipation, and special lead-lug arrangement permits easier installation in crowded chassis. IRC Power Wire Wounds are available in a full range of sizes and resistance values and terminal types.



Widest Replacement Coverage with Minimum Control Stocks

Most adaptable of all radio-TV technicians' volume controls, IRC Type Q Controls give you full replacement coverage with only nominal control stocks. IRC's exclusive Knob Master Shaft fits most push-on knobs without alteration except cutting to length. And IRC's Interchangeable Fixed Shaft feature allows fast control conversion to suit almost any radio or TV set. Handy IRC Volume Control Cabinet is the ideal way to buy and stock Q Controls. Cabinet stock of 18 controls handles over 90% of your single carbon control replacements.

Here are Your IRC "BEST SELLER" Resistors and Controls listed in order of popularity

TYPE BT RESISTORS	
Type	Value
BTS ½ watt	0.1 meg.
BTS ½ watt	0.47 meg.
BTS ½ watt	22,000 ohms
BTS ½ watt	1.0 meg.
BTS ½ watt	1000 ohms
BTS ½ watt	10,000 ohms
BTS ½ watt	1500 ohms
BTS ½ watt	0.22 meg.
BTS ½ watt	4700 ohms
BTS ½ watt	100 ohms

POWER WIRE WOUND RESISTORS	
Type	Value
1¼A 10 watts	10,000 ohms
1¼A 10 watts	5000 ohms
1¼A 10 watts	1000 ohms
1¼A 10 watts	200 ohms
1¼A 10 watts	100 ohms
1¼A 10 watts	75 ohms
1¼A 10 watts	15,000 ohms
1¼A 10 watts	2000 ohms
1¼A 10 watts	1500 ohms
1¼A 10 watts	2500 ohms

REPLACEMENT CONTROLS		
Stock No.	Ohms	Taper
Q13-133	0.5 meg.	C
Q13-137	1.0 meg.	C
Q11-133	0.5 meg.	A
Q11-137	1.0 meg.	A
Q13-139	2.0 meg.	C
Q11-123	50 K	A
Q13-137X	1.0 meg.	H
Q11-128	0.1 meg.	A
Q13-139X	2.0 meg.	H
Q13-130	0.25 meg.	C

Cash in on IRC "BEST SELLERS"



Ask your IRC Distributor to set up a sensible inventory for you, based on these fast-moving units. Also, get Catalog Bulletins DC1, DC5 and DC8 on these parts from your IRC Distributor—or send post-card to us for your copies. IRC "Best Sellers" can save you money!



Wherever the Circuit Says ~~~

INTERNATIONAL RESISTANCE CO.

423 N. Broad Street, Philadelphia 8, Pa.

A Pledge to You!



Exactly seven years ago (April 1, 1946) twelve of us started to work for you as Howard W. Sams & Co., Inc. Our objective—to provide Radio Service Technicians with factual, helpful, uniform, time-saving servicing data, at the lowest possible cost. That was my pledge to you.

In seven years we have somehow managed to keep up with things, never being satisfied or content to rest on the day's accomplishment. The fun of licking tomorrow's problem—the keen anticipation of studying something new, something different, has always acted to hold our interest and to spur us on to surmount every obstacle.

PHOTOFACT Folders, Publications and The PF INDEX and Technical Digest are living examples of keeping faith with you.

For seven years, during an unprecedented era of constant advances in all costs, a Set of PHOTOFACT Folders at \$1.50 has been your most profitable purchase. My pledge to you has been kept.

It has become economically impossible to continue the \$1.50 price established on a Set of PHOTOFACT Folders seven years ago. As this issue of the INDEX goes to press, I do not know what the new price will be.

I do know that PHOTOFACT Folders will continue to be your most profitable purchase. We will continue to give you the best we have in us—of which this issue of the INDEX is an example. We will continue to give you more than you get from any other dollar you spend. That again is my pledge to you.

PF INDEX

AND TECHNICAL DIGEST

VOL. 3 • NO. 2 MARCH-APRIL, 1953

JAMES R. RONK, Editor

Editorial Staff: Merle E. Chaney • Robert B. Dunham
Ann W. Jones • Glenna M. McRoan • Glen E. Slutz
Margaret Neff • L. H. Nelson • C. P. Oliphant

Technical Director: W. William Hensler

Art Directors: Anthony M. Andreone • Pierre L. Crease

Photography: Robert W. Reed

Production: Archie E. Cutshall • Douglas Bolt

Printed by: The WALDEMAR Press; Joseph C. Collins, Mgr.

CONTENTS

Shop Talk	
Milton S. Kiver	5
Operation UHF	
W. William Hensler	9
Which Antenna for UHF?	
C. P. Oliphant and Glen E. Slutz	21
UHF Lead-ins	
W. William Hensler	27
Use of UHF Converters	
Merle E. Chaney	31
UHF Strip Installation	
W. William Hensler	35
UHF Tuner Kit Field Installation	
Merle E. Chaney and W. William Hensler	39
Audio Facts	
Robert B. Dunham	43
Dollar and Sense Servicing	
John Markus	49
Photofact Cumulative Index	
No. 37 Covering PHOTOFACT Sets Nos. 1-200 Inclusive	51
Status of TV Broadcast Operations	
Western States	118
Mid Western States	119
Central States	121
North Eastern States	122
South Eastern States	123
CP's Granted in Feb. 1953	117
TV Station Channel Shifts	117
+ More or Less —	126



HOWARD W. SAMS, Publisher

COPYRIGHT 1953 • Howard W. Sams & Co., Inc.
2201 East 46th Street • Indianapolis 5, Indiana

The PF (PHOTOFACT) INDEX and Technical Digest is published every other month by Howard W. Sams & Co., Inc. at 2201 East 46th Street, Indianapolis 5, Indiana—and is included as a part of PHOTOFACT folders from PHOTOFACT Distributors without additional cost.

SUBSCRIPTION DATA: For those desiring the convenience of delivery to their homes or shops, Howard W. Sams & Co., Inc. will mail each issue of the INDEX direct, promptly upon publication. The subscription charge is \$2.00 for eight issues in the United States and U. S. possessions. Acceptance under Section 34.64 P. L. & R. authorized at Indianapolis, Indiana.

Regency



Mr. Ray L. Triplett—President of Triplett Electrical Instrument Company, Blissston, Ohio—says,
"It's easy to see why Regency is 'the largest selling Dooster at any price'."

Burton Browne Advertising

Shop Talk

One of the difficulties that the beginning serviceman has to surmount, besides the technical knowledge barrier, is the variety of names by which some devices are known. Consider, for example, the lowly capacitor - probably one of the most widely used components in radio or television. Thumb through any parts catalogue and you will find fixed capacitors listed or described by one or more of the following terms: fixed, by-pass, mica, ceramic, oil-filled, tubular, disc, wax paper, metalized paper, and electrolytic, to mention the more common names. Variable capacitors have their own series of names. To one who lacks experience, the foregoing array can be bewildering indeed.

A somewhat similar situation has arisen for some of the test equipment used in radio and television. In radio, for example, the names AM generator, RF generator, and signal generator are used interchangeably for the same piece of equipment. This is an instrument that generates a single frequency (or a harmonic) for each setting of the front panel dial. The signal may be "pure" or unmodulated or it may be amplitude modulated by a 400-cycle or 1000-cycle audio frequency.

The same instrument, when used for television alignment work, may also be called a marker generator. This is because its purpose is frequently to produce a marker pip on a response curve. However, the mere fact that we have changed the name does not indicate a different instrument. It is still the same AM or RF, or signal generator mentioned above. The word marker refers primarily to its application rather than to its mode of operation.

The alignment of television receivers requires the use of a sweep generator. This instrument produces an output signal in which the frequency varies back and forth across a specified range. The most common name in use is sweep generator. However, the allied names of sweep frequency generator and sweep signal generator are also heard. Sometimes, because of its

purpose, this unit will be called an alignment generator. In addition, television generator is another designation while FM generator is also widely used. The name FM, of course, arises from the fact that to produce a sweep signal, we must frequency modulate the generator oscillator.

Frequently, a sweep generator capable of covering the television frequencies (IF and/or RF) can also be used to align FM receivers. However, it does not necessarily follow that an FM generator designed for the sweep alignment of FM receivers can be used to align television receivers. So care must be observed when purchasing such units.

The foregoing are the two test instruments that have the greatest number of alternate names. The other instruments that are used may have one or two names but usually the beginner has little difficulty in determining what they refer to. Thus, a field strength meter and a field intensity meter are alike, a tube tester and a tube analyser refer to the same instrument, and a cross-hatch generator is basically the same as a linearity generator. One instrument in a group may be capable of doing more or less than another instrument in the same group, but this is more a function of price than it is of a difference in designation.

This penchant for using two or more names for the same thing exists quite extensively for test equipment controls, perhaps more so than it does for the equipment itself. As an example, Table 1 contains the alternate names that have been frequently used for various oscilloscope controls. Some of these alternates, like V Gain for Vertical Gain and H Gain for Horizontal Gain are quite obvious and would cause very few servicemen any trouble. But when you encounter such alternate names as X Amplitude for Horizontal Gain, Y Amplitude for Vertical Gain, Steps for Sweep Frequency, and Locking for Sync, you can readily understand why confusion exists. There are not standard designations for instrument controls and even the same manufacturer is not always consistent on different models of his own equipment.

For a long time picture tube nomenclature was standardized and followed a consistent pattern but recently it too has begun to show the ravages of a rapidly growing field. As originally set up, the numbering system on picture tubes followed this general procedure. The first number indicated the screen diameter. The P4 at the end indicated the type of fluorescent screen that the tube contained, and any letters inserted between the front number and the end P4 were meant to take

NAME OF CONTROL	ALTERNATE NAMES
Vertical Gain	V Vernier, V Gain, Vertical Amplifier, Y Amplitude
Horizontal Gain	H Vernier, H Gain, Horizontal Amplifier, X Amplitude
Vertical Centering	V Center, Vertical Position, Y Position
Horizontal Centering	H Center, Horizontal Position, X Position
Fine Frequency	Vernier, Frequency Vernier, Range Frequency, Sweep Vernier
Sweep Frequency	Coarse Frequency, Steps, Sweep, Sweep Range, Sweep Frequency Range
60-Cycle Phasing	Horizontal Phasing, Phase
Horizontal Attenuator	Horizontal Sensitivity, Horizontal Input Control
Vertical Attenuator	Vertical Sensitivity, Vertical Input Control

Table 1. Some of the Alternate Names That Have Been Used for Various Scope Controls.

FOR GREATEST TV PICTURE *Quality*



TV ANTENNAS

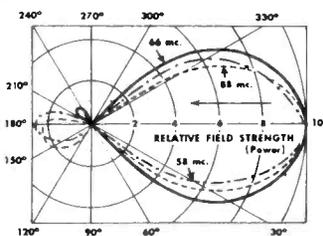


OUTSTANDING MECHANICAL SPECIFICATIONS

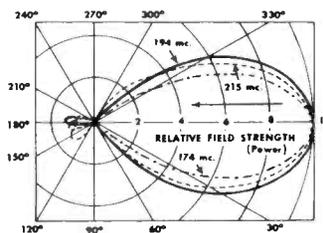
Part	Material	Yield Strength	Size	
		psi	o. d.	Wall
Mast (galv.)	3/4" Thinwall Steel Conduit	32,000	0.922"	.049"
Large Folded Dipole	35 1/2 H Al.	19,000	.500"	.049"
Small Folded Dipole	35 1/2 H Al.	19,000	.375"	.049"
Reflector	35 1/2 H Al.	19,000	.500"	.049"
Crossarm	35 H Al.	26,000	.875"	.065"
Center Support & T Coasting	Al. Alloy 45,000 psi tensile strength			

EXCELLENT RADIATION PATTERNS

These are the radiation patterns of the AMPHENOL Inline antenna at 58 mc., 66 mc., and 88 mc., in the low band, and 174 mc., 194 mc., and 215 mc. in the high band. Notice the uniformity of these lobes at all frequencies. The lack of lobes off the sides and negligible ones off the back maintains high front-to-back and front-to-side ratios necessary for the rejection of various interferences. The



Horizontal radiation pattern of Amphénol TV Antenna Model No. 114-005.



Horizontal radiation pattern of Amphénol TV Antenna Model No. 114-005.

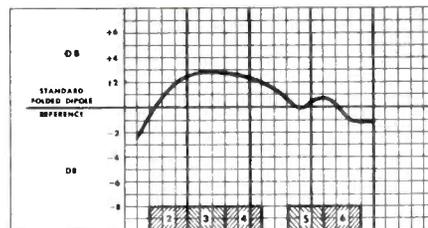
presence of a single forward lobe is usually a very desirable feature, especially when it is wide enough to provide adequate interception area for some differences in transmitter location, changes in the wave front's direction of travel, or physical movement of the antenna in high winds. Furthermore, it is not too critical of orientation. It is necessary only to aim it and forget it.

HIGHER GAIN

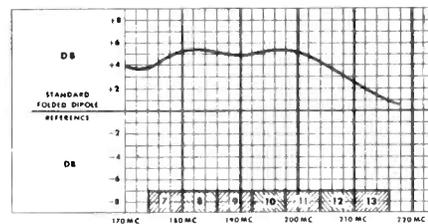
These gain curves of the AMPHENOL Inline antenna represent the intercepted voltage of the AMPHENOL Inline Antenna as plotted against the intercepted voltage of a reference folded dipole cut to the frequency being compared. There is no channel in either the low band or high band where there is more than a three decibel change within the channel that can cause picture modulation or "fuzziness." Gain of the AMPHENOL Inline antenna is quite flat over all channels.

You will find more gain designed into the high band because of greater need for it, due to higher losses at these frequencies. Also, notice the drop-off on channel six. This is at the edge of the FM band and is subject to FM interference, so the Inline's gain is purposely held down at that frequency.

The excellent broadband characteristics, impedance match, single forward lobe radiation patterns on all channels, maximum gain, lightning protection, and superior mechanical features of the AMPHENOL Inline Antenna make it the antenna for greatest TV picture quality!



Gain of Amphénol Model No. 114-005 Antenna over a reference folded dipole, 54 to 88 mc.



Gain of Amphénol Model No. 114-005 Antenna over a reference folded dipole, 174 to 216 mc.

for All the factors determining
BETTER TV PICTURE QUALITY



Write for this book containing the characteristics and test performance data of various types of antennas.

AMPHENOL AMERICAN PHENOLIC CORPORATION
1830 SOUTH 54th AVENUE • CHICAGO 50, ILLINOIS

care of structural or electrical difference between tubes possessing identical size screens.

This system was adhered to quite closely until the introduction of tubes using specially treated glass for the screen plate. The purpose of this glass (known commercially as gray glass, filterglas, or teleglas) was to improve picture contrast, principally by imposing a greater absorption on light reflections that occurred between the two intersurfaces of the glass screen. To distinguish between tubes using this glass with those using ordinary glass, the letter "A" was appended to the tube number after the P4. Thus, a 16HP4A tube possessed a filterglas screen, whereas the 16HP4 did not. In all other respects, the two tubes were identical.

Next, the letter B appeared and it was employed to indicate that the screen face has been frosted. (Frosting, produced by etching the screen face, tends to diffuse the reflections of bright lights in the room and thereby lessen their annoyance to the viewer.) This frosting, in combination with filterglas, helps to improve picture contrast considerably. The letter B is used for a frosted filterglas.

Occasionally, the letters C and D will be found. In the 19AP4C, for example, gray glass is used and, in addition, the fluorescent side of the screen is coated with a thin layer of aluminum. The aluminum backing serves to increase the light output considerably. In the 19AP4D, a clear frosted glass is used. This is in distinction to the 19AP4B where a gray frosted glass is employed.

The serviceman will find, however, that this system has not been strictly adhered to. Thus, the 20CP4 possesses a filterglas screen while the 20CP4A differs from it, not in having a different type glass face, but by having an external conductive coating over the bulb of the tube while the 20CP4 does not. Or, the 17BF4B does not possess a frosted face, but instead an aluminum backed screen. And, to compound the confusion, the 12UP4B possesses neither a frosted face, nor a metal backed screen, but differs from the 12UP4A by requiring a single magnet ion trap instead of a double magnet trap.

There are a sufficient number of other "discrepancies" to lead one to the conclusion that the additional A, B, C, D, appendages were not

carefully established as standards but were improvised when significant differences appeared in tubes having the same size screen. The only consolation the serviceman has in all this, is that tube charts are readily available and that it is usually possible to substitute tubes of equal screen size without much difficulty. Hence, some of these differences lose their significance.

Television is young and robust, expanding in all directions at once. Expansion, of course, brings with it change and what was commonplace yesterday may not be popular today. An excellent example in point is the receiving system used in current television sets. At the start, in 1946, all television receivers employed what is today known as the conventional system. That is, the sound portion of the television signal was separated from the video portion before the signal reached the video second detector. This was the only system in use until the "Intercarrier" principle was discovered by R. B. Dome of General Electric.

Now, the choice of the word conventional for the first system is perhaps unfortunate since it conveys the impression that it is the system most widely employed when, as a matter of fact, it is not. The majority of receivers now being manufactured utilize the intercarrier principle and the percentage is increasing steadily. Probably the origin of the word conventional, as applied to television receivers, arose from the fact that the conventional system came first. Thus, when the intercarrier system appeared, it was compared to the then existing system which was dubbed the conventional system.

Recently a new name has appeared for the so-called conventional system. This is split-sound and while it appears to be preferable to conventional it, too, suffers from ambiguity. The intercarrier set has a separate sound channel, which is in many respects similar in purpose, although not in operating frequency, to the sound system of conventional sets. In both systems, the sound is eventually separated or split from the video signal, the only difference being the point of separation.

So while split-sound appears to be more desirable than conventional it, too, can stand improvement.

REVIEW. Our review article this month concerns trouble shooting in horizontal AFC circuits. This article appeared originally in two

installments of the DuMont Service News as follows:

"Trouble Shooting Horizontal AFC Circuits"
by Walter Boiko
DuMont Service News,
February 1952, and
March-April 1952 Issues

Published Monthly by the
Teleset Service Department,
Allen B. DuMont Laboratories Inc.,
257 Sixteenth Avenue,
Paterson, New Jersey

One of the sections in a television receiver which gives the service technician more than its share of trouble is the horizontal sweep system. A good deal of the difficulty stems from the haziness which many servicemen have concerning the exact operation of this system, especially the automatic frequency control tube and its circuit. It is here that the operating frequency of the horizontal sweep oscillator is determined and any shift from normal conditions will immediately make itself visually known by poor horizontal lock-in.

The problem facing the serviceman is how to determine which component in the AFC system is defective. To solve this in a logical manner requires (as it always does) an understanding, first, of the operation of the circuit and second, an idea of what to expect at various points in the system. The circuits to be discussed below include the reactance-tube AFC system (developed by RCA for the 630 receiver) and the now widely used pulse-width AFC system. From the procedure outlined for these two systems, the serviceman should be able to extend it to any of the other methods in use.

A. Reactance-Tube AFC System. A block diagram of this circuit is shown in Figure 1. It consists of a sync discriminator, a reactance tube, and the horizontal sweep oscil-

◆ ◆ Please turn to page 81 ◆ ◆

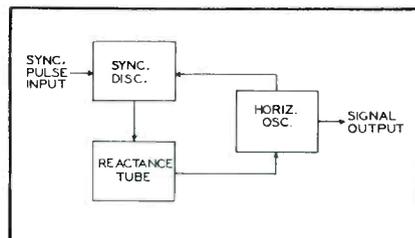


Figure 1. Block Diagram of the Stages in a Reactance Tube AFC System.

FOR YOUR
REPLACEMENTS

use Teletrons from 12" to 30"



The complete line of Teletrons

in the most popular types from 12" to 30", reflects the prominent role Du Mont has played in the advancement of big-picture television. Each time you use a Teletron for replacement, Du Mont's reputation for quality stands behind the reliability of your service.

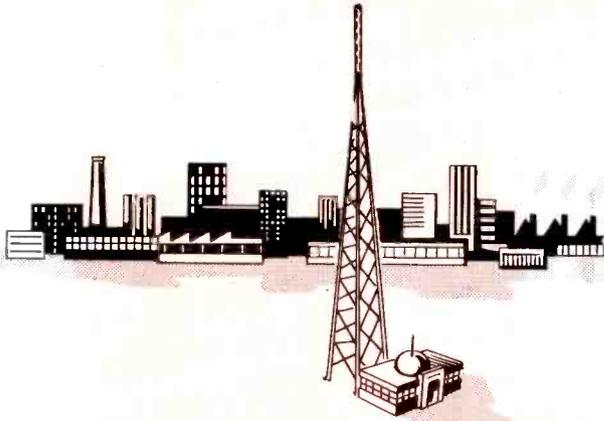
FREE! Du Mont data chart lists complete specs on all picture tube types. Attach card or letterhead to this ad for your free copy.

DU MONT

*Teletrons**

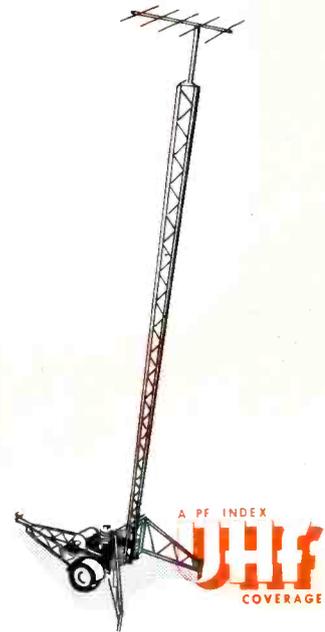
*TRADE MARK

ALLEN B. DU MONT LABORATORIES, INC.
Replacement Sales • 750 Bloomfield Avenue • Clifton, N. J.



OPERATION UHF

by W. William Hensler



Shortly after the first commercial UHF station came on the air in Portland, Oregon, many varying reports were received from that area. It was stated that at certain points no signal at all could be received. It was also felt that a specific type antenna must be employed in order to get satisfactory reception. The same thing was said of the transmission line. All of these conditions were far different from the normal type of reception which had been encountered in VHF experience.

Knowing that some isolated cases might be misconstrued as the rule rather than the exception, we felt that a more thorough investigation of UHF reception would be very helpful, not only from the standpoint of our own knowledge of this type of reception, but also to be of assistance to our readers and those people who will be called upon to make UHF installations. We immediately started plans to make field tests to gain the necessary facts and data from which we could make reports.

The first step was to decide what type of field equipment would be best suited for this purpose. After making some investigation, it was decided that an antenna trailer-tower would be the most satisfactory means of duplicating installations in the field. We immediately placed an order for such a trailer-tower

through the Philco Corporation. This trailer-tower is equipped with a telescoping tower which extends to 40', upon which up to 20' of mast can be inserted, giving a total height of 60'.

We then contacted antenna manufacturers who had already announced that they were planning to supply UHF antennas. It was our desire to obtain as many basic types of UHF antennas as possible. We told them of our plans, and asked if they could supply us with UHF antennas which they were going to offer commercially. The response we received from the various manu-

facturers was extremely gratifying. Most all of them were very anxious to send us samples which we could test first hand in the field.

In order that we could get a full picture on the operation of these antennas with various transmission lines, the transmission line manufacturers were also contacted so that we could get samples of their products. Again, the response of these manufacturers was very satisfying. We were able to obtain samples of all the basic types of transmission lines which the reports out of the Portland area indicated that we would need.

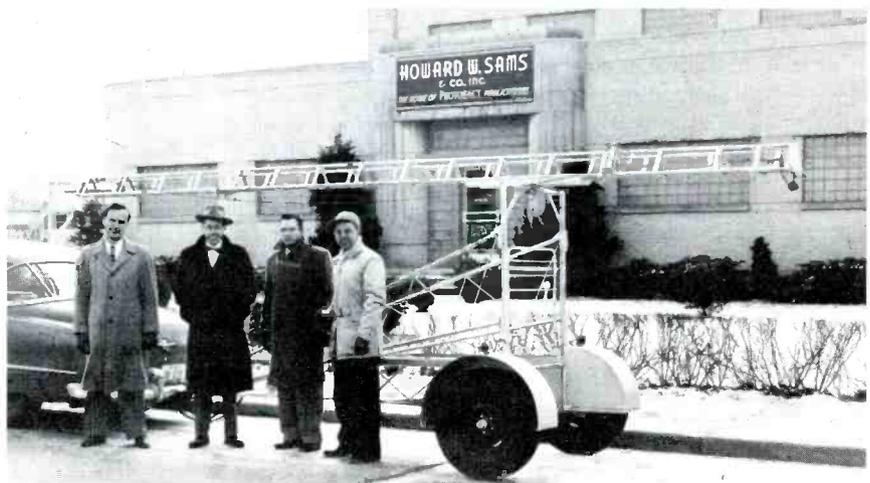


Figure 1. Field Crew and Equipment Just Before Departure.

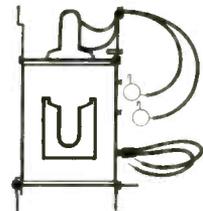
take the *kick*
 out of
 TV



FREE

HV0-X7

FLYBACK TRANSFORMER



Servicemen are in for a *pleasant* shock as Merit designs a corona-free transformer! Merit's famous HV07—the world's most popular transformer—is now treated to a miracle-tough, new non-hygroscopic insulation. Liquid-molded, this insulation encloses the high voltage winding, is impervious to moisture and high humidity and forms a watertight seal for the high voltage lead. This, the latest development in insulating material, is unaffected physically or electrically by high humidity or cycles of heat and cold. It will withstand operating temperatures 50% above normal without change—and its high dielectric constant affords maximum protection with minimum distributive capacity. And this miracle new material resists oil, acid, corrosion and is non-flammable as well.

MERIT

MERIT COIL AND TRANSFORMER CORP.
 4425 North Clark St., Chicago 40

Burton Browne advertising

Our next step was to obtain as many converters and UHF receivers as possible. Our aim here was to be able to test these various converters in actual field operations, so that we could familiarize ourselves with their operation and to particularly acquaint ourselves with any operational difficulties which might be experienced by the consumer. In obtaining the UHF receivers it would be possible to check these receivers using the various antennas, and also to check their operation as compared to the use of external converters.

As soon as our trailer was received, we set about modifying it so that it would be most satisfactory for the particular type of survey. The first step in converting the trailer-tower was the consideration of the tires to be used on the unit. Since the trailer has no springs, it was decided that larger size, lower pressure tires, than those which could be used on the particular wheels supplied with the unit, would be more satisfactory. We obtained wheels which would accommodate 8.00-15 tires, allowing us to carry lower air pressure, and providing a smoother ride.

Next was the consideration of the storage or carrying space on the trailer. The unit comes supplied with a grid-like base which is entirely satisfactory for carrying most television receiver cartons. However, since this space was to be used as a work table, we built a platform upon which we could set our test equipment and receivers when so desired. The grid work, which was

originally intended to be used as a base, was then installed in an upright position to act as a guard to prevent cartons or equipment from falling off the rear of the trailer. The platform and the upright grid structure can be seen in Figure 2. This particular type construction also lends itself to easy strapping, or tying down of equipment.

It was decided that fenders should be installed on the trailer. These were installed at a local welding shop and were made of sheet steel, reinforced with angle iron so that there would be no vibration which might cause damage to the trailer. Figure 3 shows the mounting brackets used to hold the fenders.

The next step was that of wiring the trailer for night operation. We first installed a tail and stop light combination, and license plate holder. We then installed a red clearance lamp at the rear end of the tower and also two yellow clearance lamps pointing one to each side on the top of the two fenders. Since the trailer itself is merely a skeleton, it was felt that the extra clearance lights pointing outward on the side were required. One of the side clearance lamps can be seen in Figure 3.

Since the trailer had no springs it was necessary to install an extra-heavy trailer hitch on the car which was to pull the unit. Although there was a comparatively small amount of weight impressed on the car, the unsprung axle exerted considerable forward and backward motion as the



Figure 3. Fender Mounting Detail.

trailer would hit bumps or chuck holes. A light hitch on this type of trailer might easily weaken and snap due to the sudden jerking action. Loops were installed on the trailer hitch and also on the trailer to allow for connection of safety chains. This is necessary by law in some states and if such an arrangement is to be used, the local regulations should be consulted.

Another modification on the trailer, was the addition of mast holders. These holders were installed at the same time that the fenders were mounted on the trailer. They consisted of two short lengths of 2-1/2" pipe which were welded to the main member of the trailer. Set screws were installed in these sections of pipe allowing us to tighten them down on the mast and hold it securely. The front section of the mast holder can be seen in Figure 4 just to the left of the safety chain loops. The length of the trailer was such that a 10' length of mast could be carried and would extend only a few inches behind the fenders of the trailer. Since the tower itself extended five feet beyond the trailer and clearance lights were provided for this tower, the carrying of the mast proved very satisfactory. For a regular installation where a telescoping type mast might be employed, such an arrangement would be very useful in carrying the mast to the installation point. Figure 5 shows a 10' length of mast in place in the holder. This particular feature proved extremely satisfactory

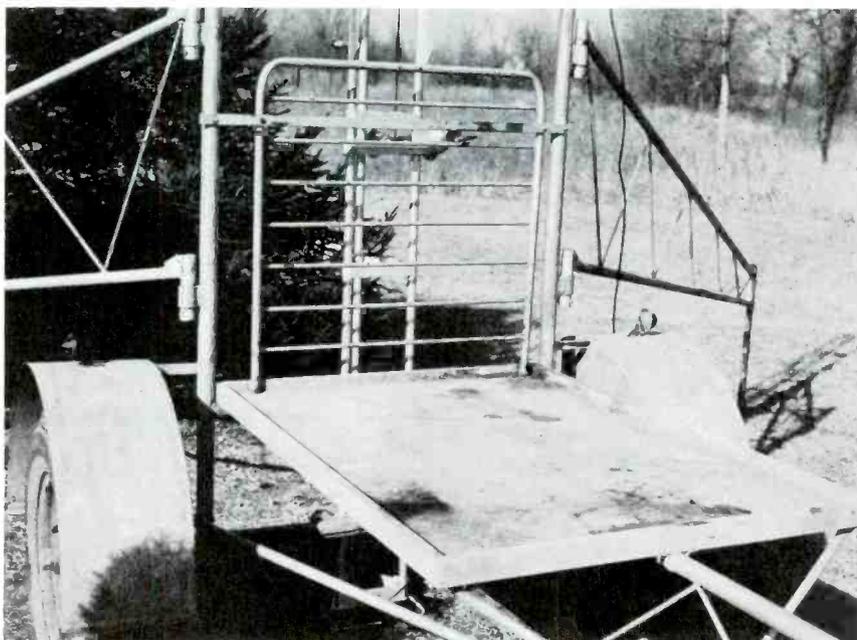


Figure 2. Trailer-Tower Showing Modified Platform.

HICKOK

MOST AMAZING

TV TROUBLE SHOOTER

Does in Minutes...Many Jobs that Normally Take Hours by Usual TV Service Methods

MODEL 650

- Crystal controlled all-purpose TV service instrument.
- Provides TV Pulses of 60; 900; 15,750 cycles and 315 KC.
- The only instrument to provide Horizontal and Vertical framing frequencies for fast servicing of deflection circuits. As well as provide drive for a monoscope or camera.
- RF output covers all channels and is calibrated in microvolts for sensitivity measurement.
- Can be used as a wire-connected TV transmitter to simultaneously transfer program to any number of TV receivers on any channel.
- Permits approximate field intensity measurement.
- Substitute video amplifier.
- Vertical, Horizontal sawtooth can be substituted for vert., horiz. oscillator in TV set.
- In addition to all these features the 650 also generates a bar and dot pattern.



WHAT USERS SAY:

"Hickok Model 650 Generator is the most practical single piece of television test equipment offered to the TV serviceman. I like every feature about it, and have seen it used in every possible way."

Jack P. Moore, Service Mgr.
Commonwealth Television Installation
& Service Company

"The Hickok Model 650 is, without a doubt, one of the most useful instruments yet developed for the Television Servicing Technician."

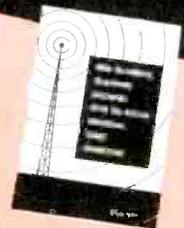
Ray S. Guichard, Mgr. Svr. Trg.
Capehart-Farnsworth Corporation

"My Hickok Model 650 Television Video Generator is the most time saving instrument I have ever used. Television Service companies who don't have this instrument should get one, and they could turn out three times as much work."

F. W. Gibbons, Oxford, Mississippi

"In my opinion, no self-respecting TV service organization should be without a 650. Hickok has again pioneered a quality piece of equipment at a price anyone can afford."

Donald T. Birch, Radio-TV Instr.
The Lively Technical School



Write today for free 32 page illustrated book showing detailed description of the latest methods of television servicing with the Hickok Model 650 Video Generator.

THE HICKOK ELECTRICAL INSTRUMENT COMPANY

10566 Dupont Avenue • Cleveland 8, Ohio

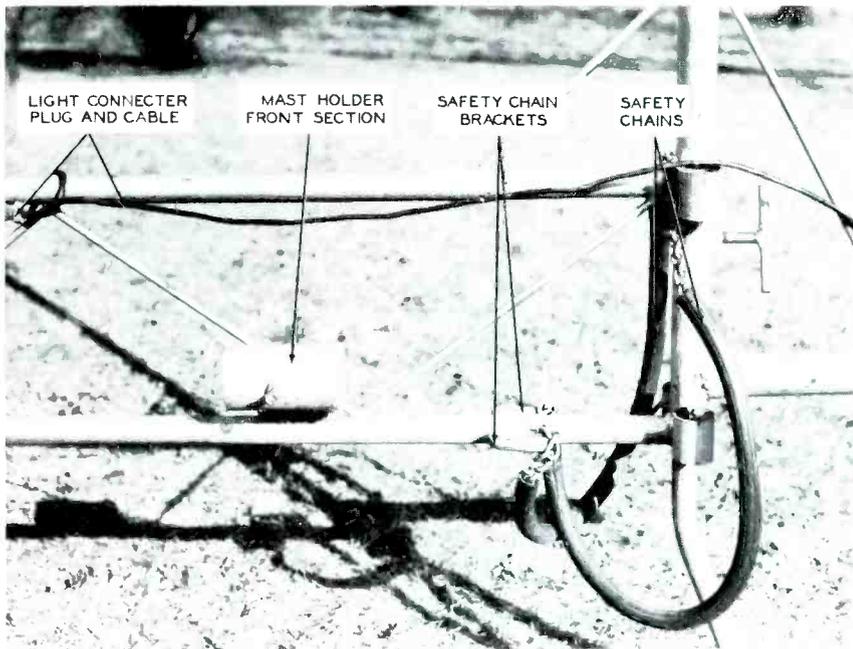


Figure 4. Mast Holder and Safety Chains.

and it is recommended that it be added to any of the trailer-towers.

In order to make possible easy and rapid change of various antennas, we used a mast which has a key and is tapered at one end. A section of this type mast was permanently installed at the top of the tower. Since a rotator was required to facilitate our operation, a short section of mast was installed in the clamps on the stationary portion of the rotator. This could be slipped on to the tapered end of the mast with a minimum of effort. The rotating section of mast in the rotator was another

short section which also had a tapered end at the top. This arrangement is shown in Figure 6. Thus, it was possible to install antennas with or without the use of the rotator. During our field tests, the rotating unit was used at all times. We also cut several short sections of mast which could be installed in the antenna clamps, at the beginning of each day, on all those antennas which we planned to check. This made it possible to very quickly slip the antenna on the end of the mast. Time was at a great premium since a comparatively few hours of test pattern were available.

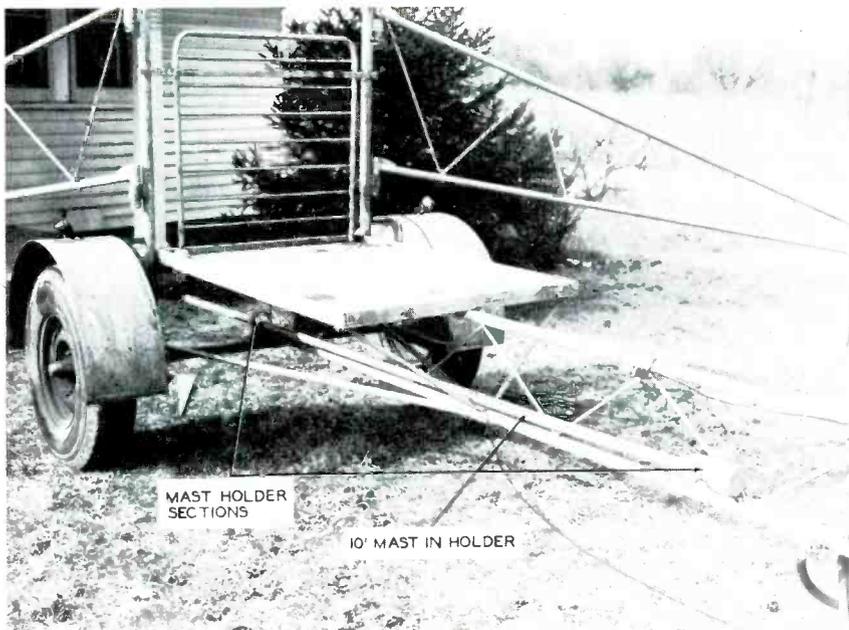


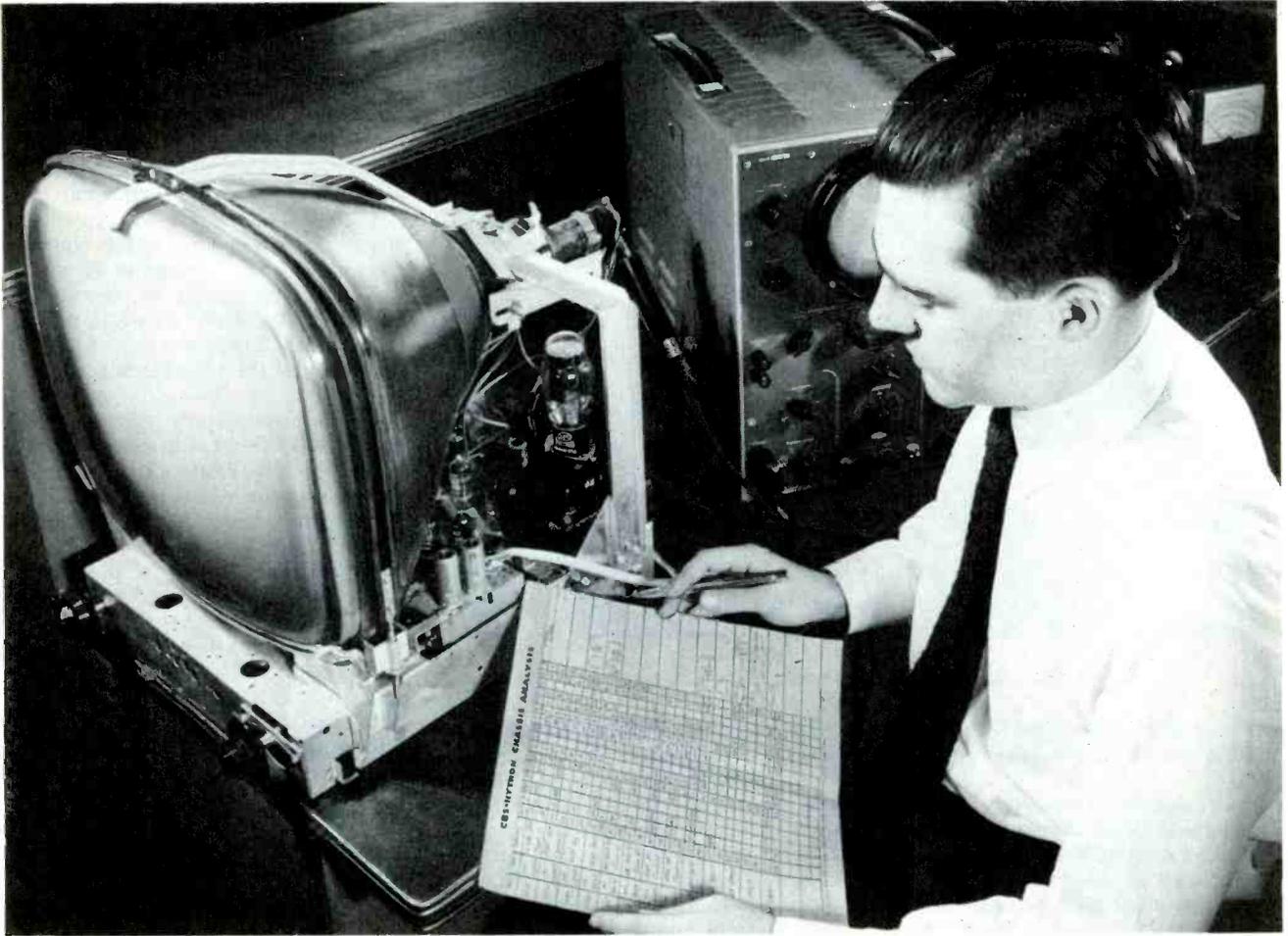
Figure 5. 10-Foot Length of Mast in Holders.

The next obstacle which we had to overcome was that of obtaining power for test equipment and receivers which we planned to use in the field. We contacted the Carter Motor Company and obtained a converter which operates from the electrical system of the car and generates 117 volts 60 cycle AC. The particular unit which was obtained has an output of 40 watts, which was sufficient to operate the rotator or the field strength meter. It did not, however, provide for operation of the television receiver.

As an auxiliary unit we also constructed a vibrator power supply, employing a 60 cycle vibrator, which was satisfactory to drive the rotator. This supply made possible the operation of the rotator at the same time that the field strength meter was being used. Since considerable arcing was noted across the points of the vibrator, when the rotator was not on, an additional set of contact points was installed in the control box. These points were closed only when the rotator was put into operation. The contacts on these points were placed in the primary circuit and thus the vibrator did not operate unless the control box switch was actuated either to the right or to the left.

We originally planned to operate the television receivers either from farm houses, service stations, or any other source of 117 volts which we could use. Since this would place considerable limits on our field of operation, it was decided that such an arrangement would not be satisfactory. We, therefore contacted the various manufacturers who supply gasoline-driven power plants in an effort to obtain a unit which would provide the power that we needed. Ultimately we obtained a Homelite unit, which has an output of 1,000 watts at 115 volts - 60 cycle AC. This unit is a single cylinder two-cycle gasoline-driven alternator which has a total weight of only 68 lbs. It is quite small and proved to be extremely satisfactory for our tests. Figure 7 shows the power unit mounted on the trailer platform. With this unit it was possible to supply not only the television receivers, but any converter which we might choose to use as well as our field strength meter, antenna rotator, and the lights for our night operations.

We then had obtained the trailer and the power plant necessary to carry on the operation. We had equipped the trailer for night driving.



Bring back that New-Set Sparkle with Performance-Tested Tubes

Meet John Cunningham, a CBS-Hytron Commercial Engineer. John is beginning at the beginning for you. Socket by socket, he is analyzing the tube requirements of a brand-new TV set design.

John knows the superior performance demanded. He concentrates his know-how on insuring top tube operation within standard specification limits. He tests sample tubes . . . checks analysis data. Working hand-in-glove with the set designer . . . and with CBS-Hytron engineers . . . he assures control of the characteristics of all tubes for this new chassis. Finally he achieves . . . from rectifiers to picture tube . . . the perfect performance all of this engineering team (and you) seek.

Constantly CBS-Hytron carries on teamwork like this. Socket by socket analysis. Day in, day out — with 9 out of 10

leading TV set makers. Both tube and set engineers pool their specialized skills. Scores of the nation's foremost TV set engineers help make endless CBS-Hytron improvements. Help assure you of unsurpassed performance in virtually *all* leading TV sets.

Small wonder that your CBS-Hytron replacement tubes recapture that new-set sparkle. Please *your* customers. Cut *your* call-backs. Profit more. Take advantage of CBS-Hytron engineering. Demand CBS-Hytron . . . your logical replacement tube, because it is performance-tested all the way . . . from original to replacement.



MANUFACTURERS OF RECEIVING TUBES SINCE 1921
HYTRON RADIO AND ELECTRONICS CO.

A Division of Columbia Broadcasting System, Inc.
Main Office: Danvers, Massachusetts

NEW...BIGGER...BETTER

FREE!

6th Edition

**CBS-HYTRON
Reference Guide
for
Miniature Electron
Tubes**



- A CBS-Hytron original . . . it's unique.
- All miniatures, regardless of make.
- 250 miniature types . . . 87 new.
- 111 basing diagrams . . . 34 new.
- Similar larger prototypes indicated.
- 8 packed pages of data you need daily.
- And it's FREE!

Get your copy of this old friend brought up to date now. Ask your CBS-Hytron jobber or write direct . . . today!

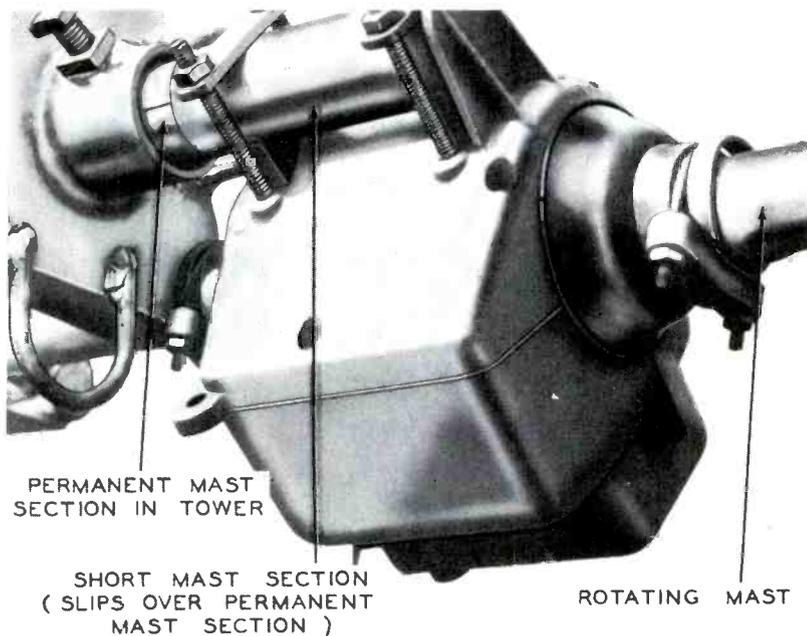


Figure 6. Rotator with Mast Sections in Place.

The car had been equipped with the necessary hitch. We had obtained antennas, transmission lines, converters and UHF receivers. It was decided to ship this equipment, except for the trailer and power plant, to the selected area so that we could leave on a moments notice and start our tests as soon as possible.

In addition to the aforementioned equipment, however, it was decided that we should send all tools and accessory equipment which we might find necessary to use during our tests. From the reports which were heard about the Portland area, they were more or less caught flat-footed and it was almost impossible to obtain replacement crystals, tubes, tools, or for that matter any equipment associated with television installation. Thus, a list of tubes used in all of our equipment was made and a spare tube kit was drawn up. The fuse problem was also taken into consideration. Operating at a remote point in the field, a tube or fuse failure might result in the loss of considerable time, so a spare fuse kit was drawn up and shipped with the equipment. All of the tools, drills, and alignment equipment were also included. We shipped standoff insulators, turn-buckles, guy wire, roof mounts, chimney mounts, and associated equipment so that we would not be held up in our operation due to the lack of any accessories.

Shortly after the completion of this preliminary work it became

more and more evident that the originally selected area adjacent to Reading, Pennsylvania would not start operation on or near the date originally planned. We maintained frequent contact to keep abreast of developments there and held up the second shipment of material until we were more assured of an early UHF start in Pennsylvania.

To be assured of not missing other UHF starts, we contacted Jackson, Mississippi and Baton Rouge, Louisiana who had announced that they planned to come on the air in the near future. Contacts there were not positive of the time when the UHF transmitters would be shipped which, of course, was the big holdup in most all areas.

The break we had been waiting for came on December 18th when RCA shipped two transmitters - one to Atlantic City, New Jersey and the other to South Bend, Indiana. The

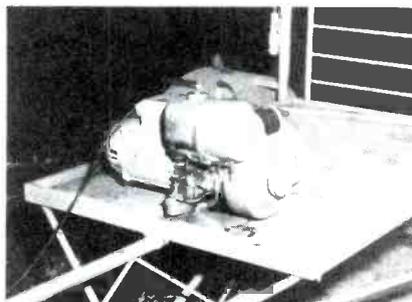


Figure 7. Power Plant Used for Field Operations.

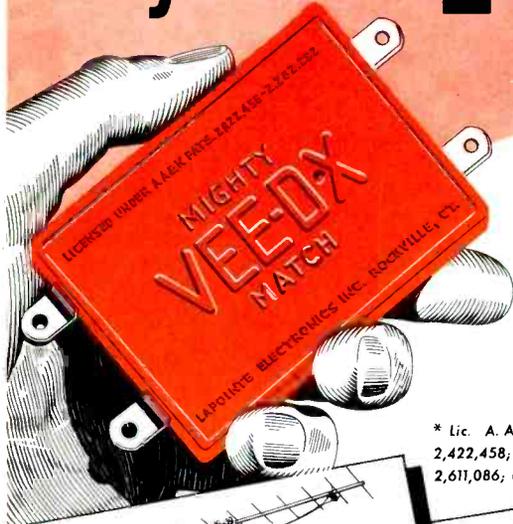
next day two transmitters were shipped to York and Wilkes-Barre, Pennsylvania. Obviously, with the South Bend area being much closer to our home office, it was to our advantage to carry on our field survey at that area. We immediately called Mr. Al Kester of Commercial Sound & Radio Company in South Bend and made arrangements for the use of his place of business as a base for our operations. He was very happy to cooperate with us and told us that he would make space available for our equipment when it arrived. In the meantime we contacted Carl Barbey at the George Barbey Company in Reading and asked them to reship our equipment from there to South Bend, Indiana. We also made another shipment from our home office of the equipment we had accumulated after our first shipment to the Reading area.

The South Bend UHF station, which operates on Channel 34, came on the air the week-end before Christmas. It was decided that we would commence our actual field survey on January 5th. Prior to this time, however, we made a trip to South Bend and became acquainted with the personnel at Commercial Sound & Radio Company and WSBT-TV. We also made reservations at a motel north of South Bend to accommodate our field crew during our stay in South Bend. This completed our preparations for the trip.

By the time January 5th rolled around, I for one had become quite eager, and I think the same feeling existed in the rest of the field crew, to get under way. We loaded up the remainder of our equipment, coupled the trailer to our car, and left our home office at approximately 10:00 A.M. on the morning of January 5th. Figure 1 is a photo of our equipment and the field crew. As could be expected, during the month of January in this particular latitude, cold weather usually sets in and such was the case during the first week of our operation.

We arrived in South Bend at about 2:00 P.M. and went immediately to the motel. We then went to Commercial Sound & Radio Company to pick up some equipment so that we could get on the air that evening. The motel in which we stayed was very well suited for our operations. We had two units and it was possible to park our trailer-tower directly in front of these cabins during the night without obstructing traffic. The trailer-tower is shown at this location in Figure 8. This enabled

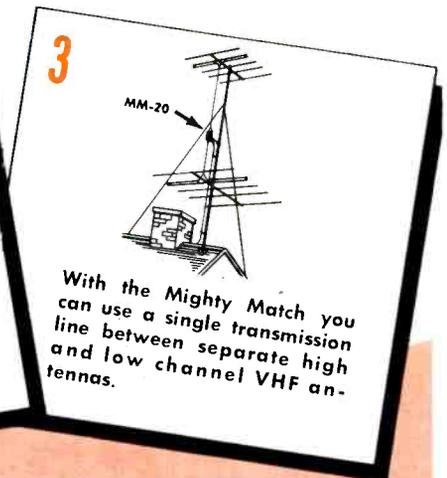
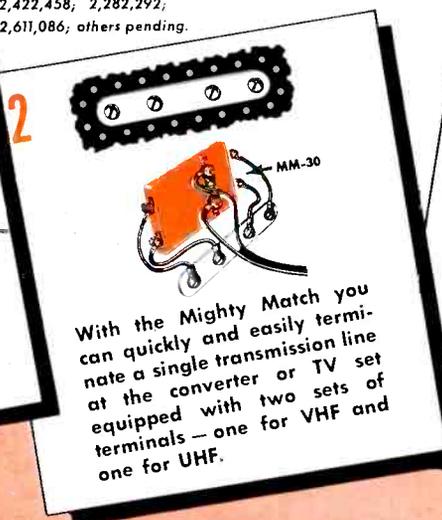
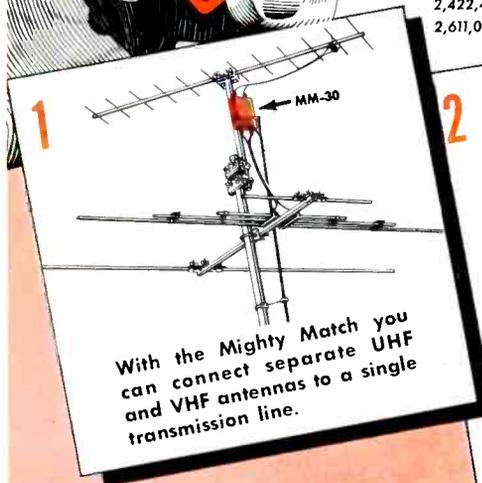
why install 2 when 1 will do?



THE VEE-D-X Mighty Match*

IS MIGHTY IMPORTANT
FOR EVERY VHF-UHF INSTALLATION

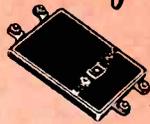
* Lic. A. A. K. Pats.
2,422,458; 2,282,292;
2,611,086; others pending.



Available 6 ways



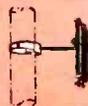
Plain MM-30 (red) for UHF-VHF



Plain MM-20 (green) for VHF only



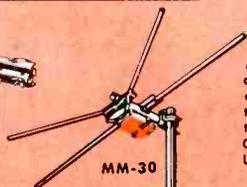
SO-MM-30 (red) for VHF-UHF with standoff for mounting on mast



SO-MM-20 (green) for VHF only with standoff for mounting on mast



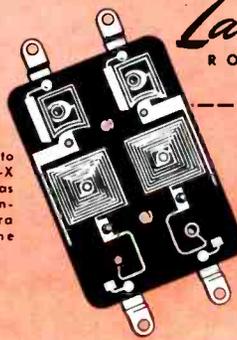
AB-MM-30 supplied with Universal Mounting Bracket for attaching UHF antenna to present VHF mast



MM-30 built into certain VEE-D-X antennas, such as the UHF "V" antenna, the Ultra Q-Tee and the Ultra Q-Tee S.

No television set owner wants two transmission lines when one will do. No installation man wants to waste time installing two when one will do. Mighty Match takes care of both situations the fastest, easiest, most profitable way for you. The patented* VEE-D-X Mighty Match is the only practical device yet perfected to make single transmission line VHF-UHF possible. Mighty Match has a double-barreled application — at the antenna — at the terminals on TV set or converter. The Mighty Match is extremely compact (only 3 1/4" x 2 1/4" x 1/4"), thanks to its newly developed printed circuits that separate all channels (2-83) automatically. Is it any wonder that Mighty Match is the magic name for all UHF-VHF installations? **WARNING** — Accept no substitute for Mighty Match. It is completely protected under A.A.K. Pats. 2,422,458; 2,282,292; 2,611,086.

LaPointe ELECTRONICS INC.
ROCKVILLE, CONNECTICUT
Formerly The LaPointe-Plascomold Corporation



The Mighty Match printed circuits, shown at left, consist of six separate sections which are independently resonant at critical frequencies in the UHF spectrum. Electrical action of the filter is entirely automatic.

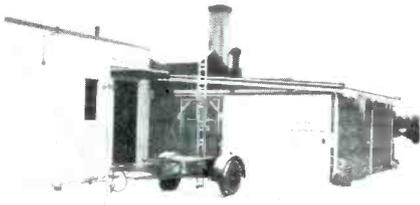


Figure 8. Trailer in Position in Front of Motel.

us to monitor the Channel 34 signal, as well as making any tests which would prove beneficial at that particular location. At this point we were approximately seven miles from the transmitter. We were north of South Bend, and the transmitter was southeast of the city, which meant that the signal actually came across South Bend proper.

At Commercial Sound & Radio, we found out that our equipment had not arrived from the Reading, Pennsylvania area, however, the equipment which we shipped from Indianapolis had been received. We picked out converters, receivers and sufficient antennas to start our operations. The first evening most of our tests consisted of visual checking to familiarize ourselves with the operation of the converters and UHF receivers. The first thing that we noted was the ease with which the equipment could be tuned. This was true of the UHF converters as well as the UHF receivers. It was no more difficult to tune the Channel 34 signal than it is a VHF channel. We were also favorably impressed by the apparent lack of drift in the UHF tuning systems. We, more or less, had envisioned the necessity of retuning during the first few minutes of operation, but such was not the case.

In order to clarify the procedures which were employed in making these tests, it might be well to point out some of the methods used in making our measurements. The test pattern time from WSBT-TV was from one to five in the afternoon. This gave us four hours of working time in the field. Since this is a comparatively short time, we tried to get set up at our particular location so that we could commence operation exactly at 1:00 o'clock. Prior to this time we would decide what type of testing was to be performed during that day. There were several basic tests made.

One was the testing of a given antenna, under as nearly identical conditions as possible, at various distances from the transmitter. This gave us a picture of the signal strength that could be expected at these various distances. By using the same antenna, lead-in and field strength equipment, it was possible to get a very good overall picture of the signal that could be expected at any given point.

Another plan of operation was to check a variety of antenna types at any given location. This enabled us to check the merits of a specific type of antenna as far as gain is concerned.

Still another plan was to determine what locations were exceptionally bad as far as ghost problems were concerned. In order to obtain this information, some personnel who had some experience in making installations were contacted to find out which areas were particularly bad in this respect.

Our plan of operation also included a check of several lead-ins

under as nearly identical conditions as possible. In this way it was hoped that the merits or demerits of specific types of transmission line could be determined.

Each morning we determined which type of operation would be carried out during the day. This, of course, governed the type of antennas which we would take with us. After the antennas were selected, the short sections of mast, which were previously mentioned, were installed in the U clamps on the antennas so that a minimum of time would be required in changing the units in the field.

The following equipment was carried in the trunk of the car at all times for the purposes of monitoring the signal and making field strength measurements. A Motorola 17" receiver, in which we had installed a UHF converter kit, was used to check the quality of picture and also as a monitoring device. An RCA U2 converter was used in conjunction with a Simpson Model 488 Field Strength Meter to make relative field strength readings. We also incorporated a variable voltage transformer so that the voltage supplied by our portable power plant could be adjusted to the proper voltage. As a constant check on this voltage, a Hickok Model 900B Watt-Amp.-Meter was permanently connected into the circuit.

At any of the test locations, all that it was necessary to do, as far as our electrical circuits were concerned, was to start the power plant and plug in the extension lead. All of the equipment was left on, eliminating the necessity of turning off and on the individual pieces of equipment. A view of this equipment



Figure 9. Testing and Monitoring Equipment Setup.



Figure 10. Testing Under Adverse Conditions.



Your dollar buys
more "instrument"
...in our Model



630

by R. L. Triplett
PRESIDENT

Because we build every major part of our instruments the quality is carefully controlled. For example, we know we have more torque driving our pointers because we designed and built the complete instrument. We know we have sustained dependance in the shafts and switch contacts of our test equipment for the same reason. Cycle tests for switches exceed several times the rigid requirements of the armed forces.

There is another important value to you. Because we make our own components we eliminate the profit another manufacturer would make in selling them to us. And this "profit" is passed on to you.

Consider these features of Model 630 V.O.M., for example—

One Hand Operation—One switch with large recessed knob has a single position setting for each reading. Leaves one hand free. Eliminates switching errors, trouble, saves time.

Ranges—AC-DC Volts: 3-12-60-300-1200-6000 (AC, 5000 Ohms/Volt; DC, 20,000 Ohms/Volt). 60 Micro-Amps. 1.2, 12, & 120 Mil Amps. DB scales at 1.73V on 500 Ohm line, 0-66 DB output.

Highest Ohm Reading—To 100 Meg. in steps of 1000-10,000-100,000 Ohms—100 Megohms.

Yes, with us it's a matter of personal pride to make "Triplet" stand for better construction and more service for your test equipment dollar.

R. L. Triplett

PRESIDENT

TRIPLET ELECTRICAL INSTRUMENT CO.
Bluffton, Ohio



630 V.O.M.

only \$3950



Triplet

For service, accuracy, highest dependability, buy

setup is shown in Figure 9. Incidentally, the item at the rear of the trunk which looks like a coffee pot is not a UHF antenna. It actually is a coffee pot, which we carried along for "thawing out" purposes. The weather during the first week of operation was extremely cold.

On the first full day of field operations we were plagued by a snowfall which practically covered our instruments at times. This test site is shown in Figure 10. All of us on numerous occasions have heard of snowy pictures, but frankly this is the first time that we had experienced a situation where this was literally true. Although our operations on this particular day were hampered to a great extent, we did gain sufficient experience to show us what equipment was necessary for field operation, and many short cuts were discovered that enabled us to do a quicker, more efficient job.

It was decided that readings should be taken at several antenna heights, at each position. Readings were taken at each positioning of the cross-members on the tower. This resulted in the taking of 14 measurements for each particular test. By doing this it was hoped that we could get a pattern of signal strength versus antenna height. In order that the proximity of the lead-in to any object did not affect our readings, we had one man hold the lead-in with an insulating strip. All of the lead-ins which we used were approximately 60' in length. This allowed plenty of length, even with the tower at full height.

On Wednesday night of the first week we experienced exceptionally bad weather. There was a great amount of freezing rain and

upon arising in the morning we found that our tower was completely iced up. Each evening before retiring we cranked the antenna down, although we left it in a vertical position. On this particular night, had the antenna been at full height, the runners would have been iced up so badly that it would have been impossible to let the antenna down. The iced condition can be seen in Figure 11. Since the antenna was at the lower level there was sufficient clearance to hinge the antenna tower. We then set about breaking off the ice, as is shown in Figure 12.

In order that the editorial staff could start compiling our data as quickly as possible, a report was sent back to our home office each evening on a wire recording. Special test data forms had previously been designed and the data for these reports were included on the wire. In addition to speeding up the transfer of information, the wire recordings also served another purpose. Since the recordings were made each day, any impressions that we might have had as a result of a day's tests were permanently recorded. Thus, after we returned, by playing back these particular recordings, it was possible to relive our experiences for that particular day and we were less apt to forget, or lose any opinions or impressions gained from that day's operations.

The portable power plant proved to be a very valuable piece of equipment. This allowed us to be completely self-sufficient, since we did not depend upon power from any other source. We could make tests at any particular position that we desired. During the first week of operation the power plant was not permanently mounted on the trailer. Thus, it was necessary at each stop

to untie it and remove it from the platform. We usually set it several feet away from our operation to reduce the noise level. However, the second week, in order to cut down on the time required in mounting the power plant on the trailer and taking it off at each stop, the unit was permanently mounted on the platform of the trailer. Thus, all that was necessary to do at each stop, was to start the engine and plug in the extension cord. Except for a little hard starting on a couple of occasions, we experienced no difficulty whatsoever with the power plant. Of course, this hard starting was to be expected since the temperature was around 3 degrees, at times.

One of the things that concerned us, in connection with the portable power plant, was the possibility of a variation in line frequency affecting our measurements. In checking the frequency under a constant load, it was found that it was within one cycle, and since this condition exists sometimes on local operation when viewing a network program, no more difficulty was experienced than would be encountered when viewing this type of signal. Since the frequency of operation was slightly different from that of the line frequency at the transmitter, slight hum bars were noticed on some occasions. These, however, did not affect our readings in any way.

Since some of our readings were made on very narrow roads, it might be interesting to point out the methods which we employed to prevent blocking traffic. After selecting the test sight, the trailer was unhitched from the car and turned at a slight angle which placed the front end of the tower at the side of

◆ ◆ Please turn to page 85 ◆ ◆

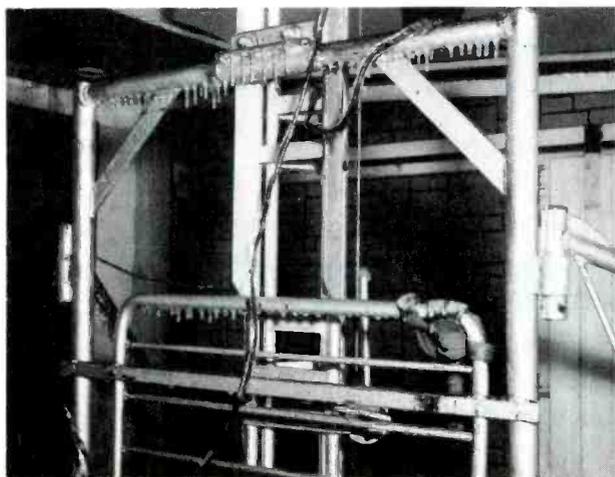
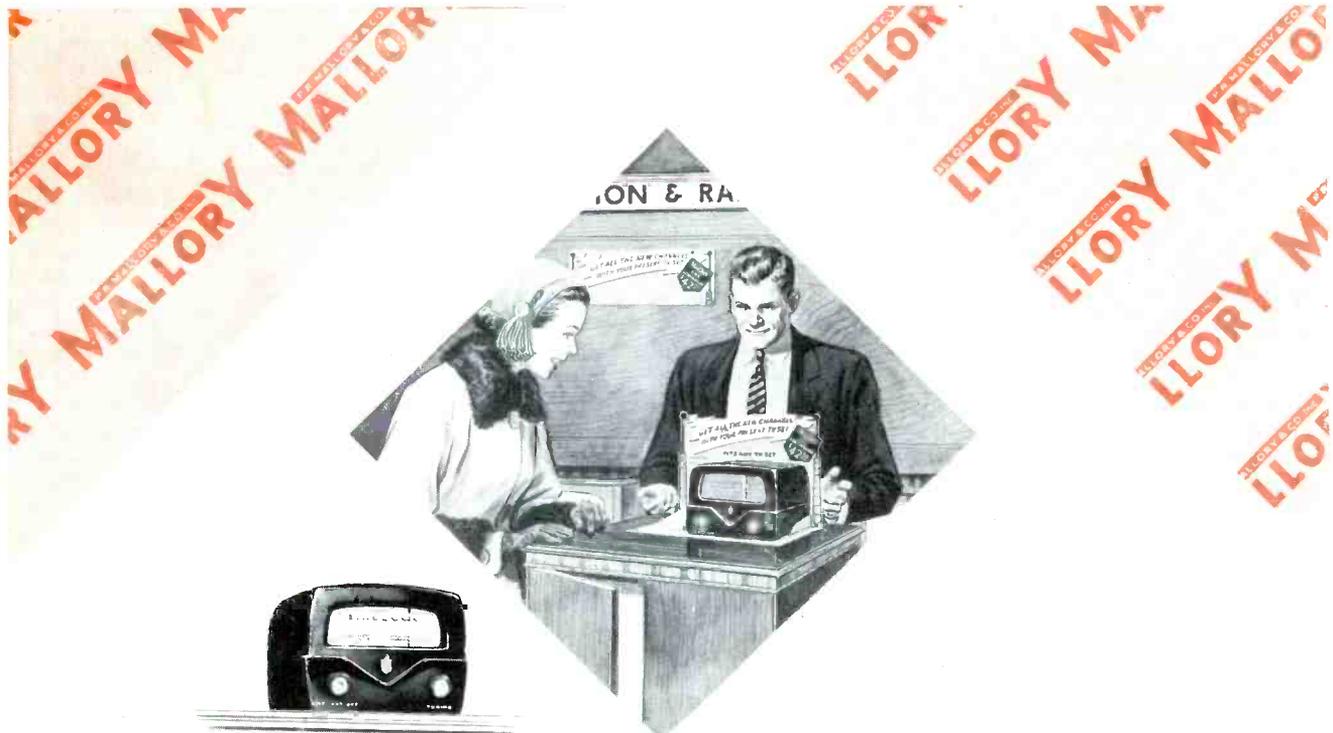


Figure 11. Ice Formation on Trailer.



Figure 12. Chipping Ice.



When UHF comes to your town, here's your "best seller" ... the MALLORY UHF CONVERTER

THE precision-built, performance-proved Mallory Converter has these sales-building—profit-making features—

- Reception of *all* UHF channels, for *any* TV set, without sacrifice of existing VHF channels.
- Quick, easy installation. No internal changes needed in any set.
- High quality picture definition . . . easy tuning.
- Small, attractive cabinet in deep maroon plastic measures only nine inches wide, seven inches high.

Because the Mallory Converter tunes in *all* channels in *any* area, the customer who has one has nothing more to buy . . . even if he moves to another city.

ASK YOUR MALLORY DISTRIBUTOR to show you the Mallory UHF Converter. Ask him about its success where UHF television is already on the air. For extra sales and profits, make it *your* "Best Seller" when UHF comes to town.

They are easy to install. Connection of antenna leads and power lines from the Converter to the set is all that's needed to install the Mallory Converter. It is done right in your customers' homes . . . in a matter of minutes.

P. R. MALLORY & CO. Inc.
MALLORY

CAPACITORS • CONTROLS • VIBRATORS • SWITCHES • RESISTORS
RECTIFIERS • POWER SUPPLIES • FILTERS • MERCURY BATTERIES
APPROVED PRECISION PRODUCTS

P. R. MALLORY & CO., Inc., INDIANAPOLIS 6, INDIANA

*Depend on Mallory
for
Approved Precision Quality*

Which Antenna

A PF INDEX for UHF COVERAGE

by Glen E. Slutz
and C. P. Oliphant

Interest is growing rapidly in the new UHF band of television broadcasting. Many questions are being asked, particularly by service technicians who work in areas which now have, or soon will have, one or more UHF television stations on the air. Facts pertaining to the installation of antennas are frequently desired. Here is a list of some of the questions along this line:

What type of antenna is best for UHF?

What are the difficulties encountered in making an installation for UHF?

How does the terrain, or structures in the area surrounding the receiving antenna, affect the reception?

Does the height of the antenna make much difference in the strength of the received signal?

What conditions govern the choice of using a strictly UHF antenna or an all-channel VHF-UHF antenna?

At what distance from the transmitter is best reception obtained?

What is considered the fringe area of UHF?

Is there much ghost trouble?

The answers to these questions and many others will be fully arrived at as working experience in this new field is gained. In this report an endeavor has been made to use the experience gained during our field trip to South Bend, Indiana, as the

basis for answering as many of these questions as possible. A two week trip, of course, is not a real substitute for months of installation experience, and it is expected that the ideas presented here will receive their share of amendments as time goes by.

The different makes of antennas which were field tested on the trip are listed in Chart A. Many tests were made on the comparative performance of these antennas at several locations, and the data has been condensed into graphs and written evaluations. The antennas were of many makes and models as can be noted from the chart. They were selected principally for difference in design. Samples of each of the following general styles were chosen: V-dipole, rhombic, Yagi, conical, fan dipole, and colinear. (For a further description of each of these types, reference may be made to "UHF Antennas" in Photo-fact Index and Technical Digest #36 for January-February, 1953.) In addition there were one or two an-

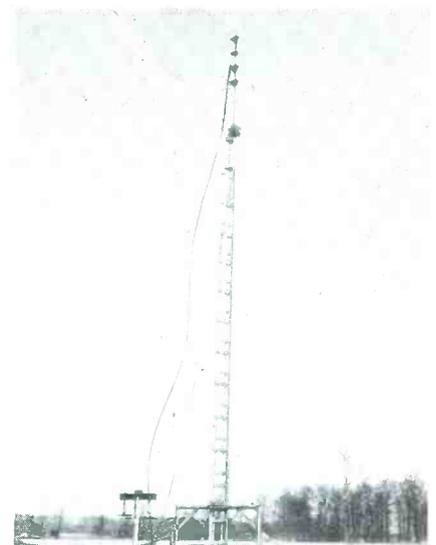


Figure 1. Portable Antenna Tower Showing Rotator Used for Orientation of Antenna.

tennas which cannot be readily classified in these categories.



Figure 2. Lead-in Being Held Above the Ground During a Typical Test.

NOW! RCA'S BIG "PARTS PREMIUM PROGRAM"



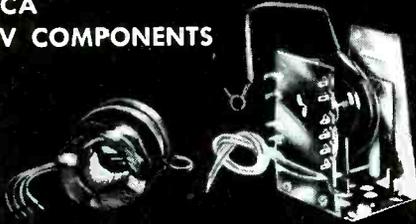
BUY THESE...

GET PREMIUMS LIKE THESE...

RCA SPEAKERS



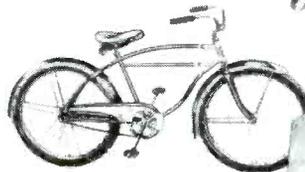
RCA TV COMPONENTS



RCA LIGHTNING ARRESTERS AND ACCESSORIES



RCA VICTOR SERVICE PARTS



Here's all you do...

1. For every dollar purchase of RCA Parts, your **RCA Parts Distributor** will give you a valuable RCA Premium coupon.
Save your coupons
2. Get a copy of the valuable RCA Parts Premium Catalog from your **RCA Parts Distributor**. Choose from the hundreds of wonderful premiums you can win. The catalog
3. will tell you how many coupon-points you need for each article.
3. When you've accumulated sufficient coupons to win your "dream premiums" . . . take the coupons to the **RCA Parts Distributor** from whom you made the purchases.
4. Your **RCA Parts Distributor** will order the premiums of your choice. It's as simple as that!
5. Start saving now . . . premium coupons can be earned only until July 31, 1953. However, RCA Premium Coupons do not expire until September 1, 1953.



RADIO CORPORATION of AMERICA
ELECTRONIC COMPONENTS
HARRISON, N. J.

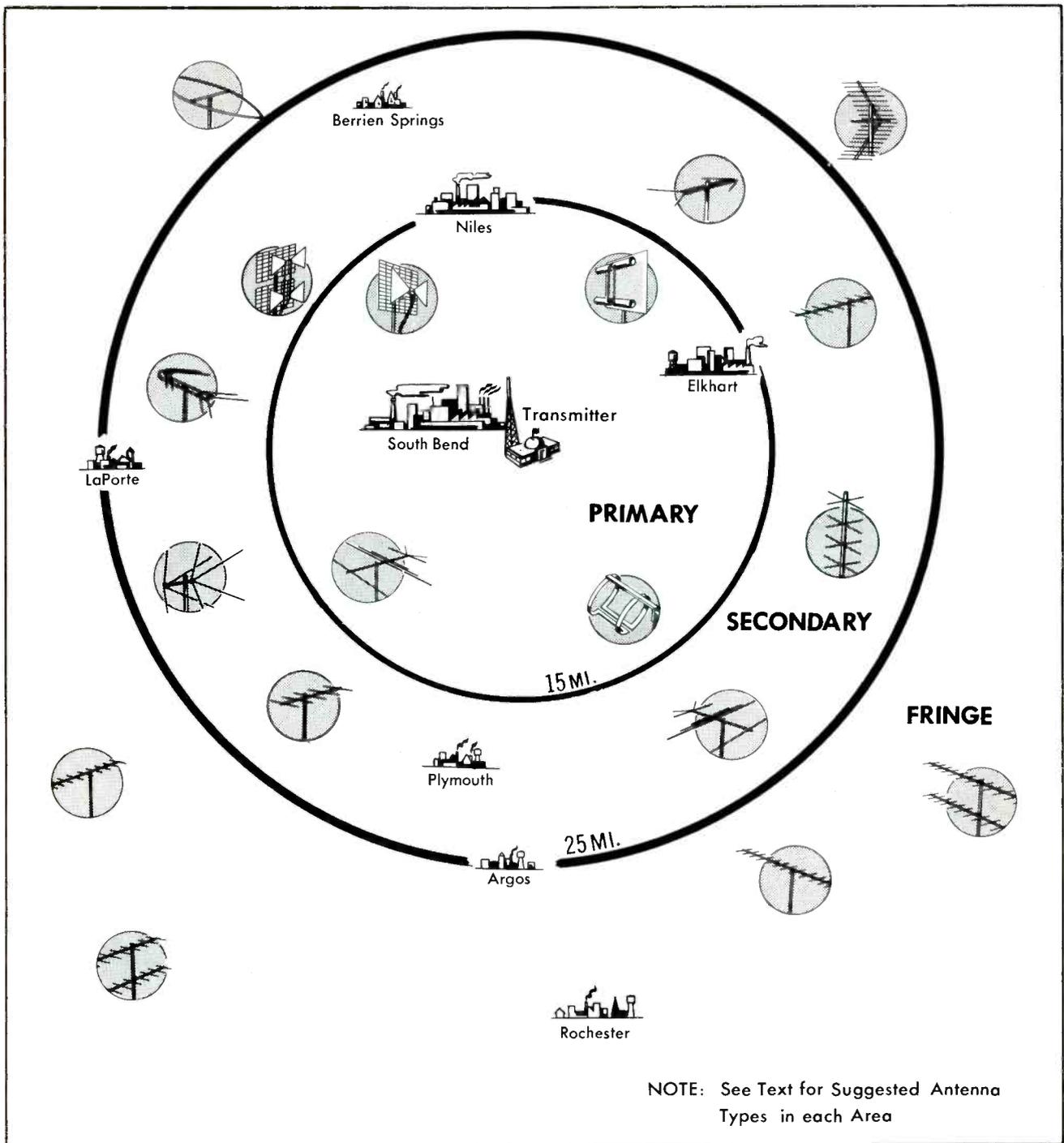


Figure 3. Drawing of the Three UHF Service Areas in the South Bend Territory.

Nearly all the antennas in Chart A were tested at various heights above the ground. Furthermore, the directivity characteristics of several were investigated through the use of a rotator, visible in the photograph of Figure 1. The rotator also facilitated the tracking of strong ghost signals when they were encountered.

Lead-in losses were kept nearly constant by using the same lead-in in all of the antenna com-

parison checks and also by keeping the line away from both the tower and the ground. Figure 2 shows the lead-in being held above the ground during a typical test.

The measurements of signal strength were obtained through the combined use of an RCA UHF converter, Model U-2, and a Simpson field-strength meter, Model 488. Field-strength figures given in this report should not be construed as absolute signal levels in microvolts

per meter; rather they are figures of comparison only.

A television receiver equipped for UHF reception was used to check the quality of the signal being received on each antenna tested. The receiver was especially valuable for ghost tracing.

Tests were made at various locations in and around South Bend, Indiana. For the purpose of grouping these locations, the South Bend

In a Class by Itself!

THE AMAZING NEW **RCP·AM·FM·TV** SERVISHOP

Series 8010



MODEL 740A



MODEL 533M



MODEL 730



MODEL 808

THE ONLY COMPLETE PORTABLE TV·FM·AM SERVICE SHOP

A LONG TIME COMING — Worth waiting for! This complete TV-FM-AM Service outfit can go with you to the receiver — or use the units individually in your shop or home. Check, test and align the set quickly, from antenna to picture tube or speaker. All the instruments for necessary measurements right at your fingertips. The Series 8010 Servishop includes:

1. MODEL 740A . . . TV "DO-ALL" GENERATOR
2. MODEL 533M . . . MIDGETSCOPE (A High Sensitivity 3" Scope)
3. MODEL 730 . . . UNIVERSAL SIGNALIGNER (AF-AM (RF)-FM Signal Generator)
4. MODEL 808 . . . TV-RADIO-CR TUBE TESTER, REACTIVATOR AND VTVM
5. MODEL HVMP-1 . . . A High Voltage Multiplier Probe
6. HAND RUBBED — FINELY FINISHED NATURAL OAK CASE

If bought separately these units would cost over \$30.00 more

In ONE practical portable case of finely finished hand rubbed natural oak, with a compartment for tools, tubes, leads, etc.; SIZE: 15-3/4" x 13-5/16" x 11". WT. 35 lbs. (approx.) SERIES 8010 — Complete, ready to operate.

\$310.00
NET

SEE IT AT YOUR JOBBER TODAY!

Write for the new, colorful fully illustrated 1953 RCP catalog giving detailed specifications on the Series 8010 and other top-quality instruments in the RCP line. Address all requests to Dept. PF-3.

JAMAN ADVERTISING, INC.

RADIO CITY PRODUCTS CO., Inc.
152 WEST 25th STREET • NEW YORK 1, N. Y.

RCP

V-Type

Trombone (Ward, Model TV-132)
V's, stacked (Channel Master, Model 404).
V-beam (JFD, Model UHF 500),
V-dipole with VHF antenna (Vee-DX Ultra Q-Tee).

Rhombic

Rhombic (Tricraft, Model U-1).

Yagi

Yagi, 8 element (Vee-DX, Model LJU).
Yagi, 12 element (Vee-DX, Model LLJU 28-39).
Yagi, 5 element (RMS, Style 5-34).
Yagi, 8 element (RMS, Style 8-34).
Yagi, duplex (Telrex, Model 300).

Conical

Conical, 4 bay stacked (Taco, Catalogue #3005).
Conical V-beam, double (Telrex, Model 400).
Conical V, single (Telrex, Model 1X-500).

Fan-Type

Corner reflector (Walsco, Model 4450).
Bow-ties with screen reflectors, stacked (Walsco, Model 4402).
Bow-tie with screen reflector (Channel Master, Model 403).

Other

Colinear (Vee-DX, Model CAU).
Clover V-beam (Telrex, Model 100).
Bat wing (Telrex, Model BW-1).
Dipoles with screen reflector, stacked (Radiart, Model U-4).
Circular folded dipole (Rytel, Model RDO-1).

Chart A. List of Antennas Checked at South Bend.

territory has been divided into three major areas (See Figure 3). These will be referred to as the primary service area, the secondary service area, and the fringe area. The primary service area is that which is within a 15 mile radius of the transmitter. The secondary service area is designated as the area between 15 and 25 miles from the transmitter. The fringe area is beyond the 25 mile limit. The division of this territory in the above manner may not necessarily correspond to the division made by the management of station WSBT-TV or the manufacturer of the transmitter. It was arrived at, however, after extensive testing, which

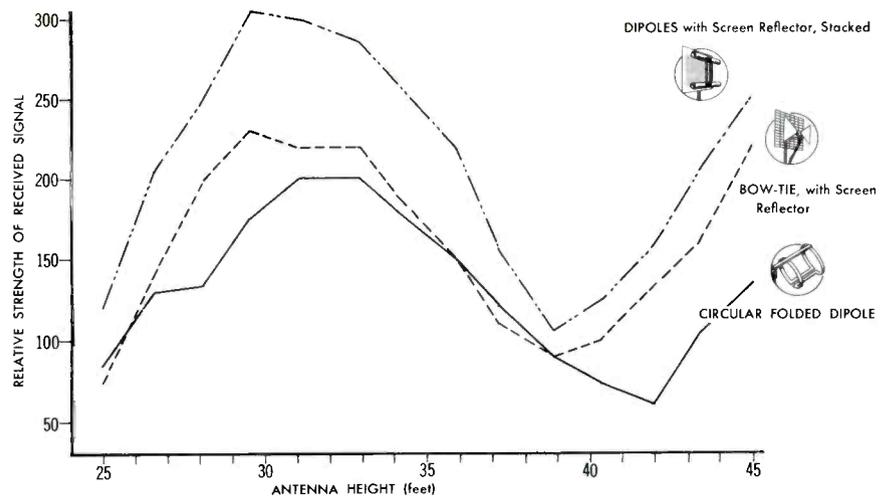


Figure 4. Relative Strength of Received Signal Versus Antenna Height at Position P-1 (1 Mile).

indicated what strength signal could be expected at various distances.

Primary Service Area -

A total of five test locations were established within the 15 mile circle in Figure 3. The first of these, which we shall call Position P-1, was about a mile from, and within sight of the transmitting tower. The country was quite open and rural in nature; there were no large buildings or reflecting objects nearby. As was expected, the signal at this point was very strong. We checked, three antennas at Position P-1 (1 mile). These antennas were the stacked dipoles with screen reflector (Radiart, Model U-4); the bow tie with screen reflector (Channel Master, Model 403); and a circular folded dipole (Rytel, Model RDO-1). The results are graphically pictured in Figure 4.

Notice especially the variation in signal strength at different antenna heights above the ground. This phenomenon was the significant feature of the test at Position P-1, (1 mile). There are at least two possible reasons for the variation. One might be the effect of the minor lobes in the radiation pattern of the transmitting antenna; these minor lobes are very often responsible for "dead spots" in the immediate vicinity of a transmitter tower. Another reason could be a cancelling effect between the direct signal and the signal reflected from the surface of the ground.

The picture showed some evidence of smear at Position P-1, (1 mile). This condition may have been due to high AGC voltage altering the

frequency response characteristics of the IF strip in the receiver. The difference in the signal pick-up of each of the antennas is not particularly important since the field-strength of the signal was so high. It may be said, however, that all three antennas operated very satisfactorily.

A further check was made on the radiation pattern of the signal by moving the antenna tower several feet at right angles to the transmitter. A sequence of readings was taken at different heights here, and when compared with the previous readings no appreciable difference was noticed. It would seem, therefore, that the vertical field strength pattern remained fairly constant at a given distance from the transmitter.

Positions P-2 and P-3 were chosen with the problem of reflections in mind. Both locations were near a large gas storage tank in the city of South Bend. A sketch of the area has been drawn in Figure 5 and the approximate distances involved have been indicated.

Position P-2 was in the midst of a residential district about three miles from the transmitting tower. The gas tank was situated nine city blocks away in nearly the opposite direction from the transmitter. There had been complaints from residents of this neighborhood concerning trouble with reflected signals from the tank. In conducting the check at position P-2, therefore, we were less interested in comparing the gains of the various antennas and more interested in determining ways

◆ ◆ Please turn to page 97 ◆ ◆

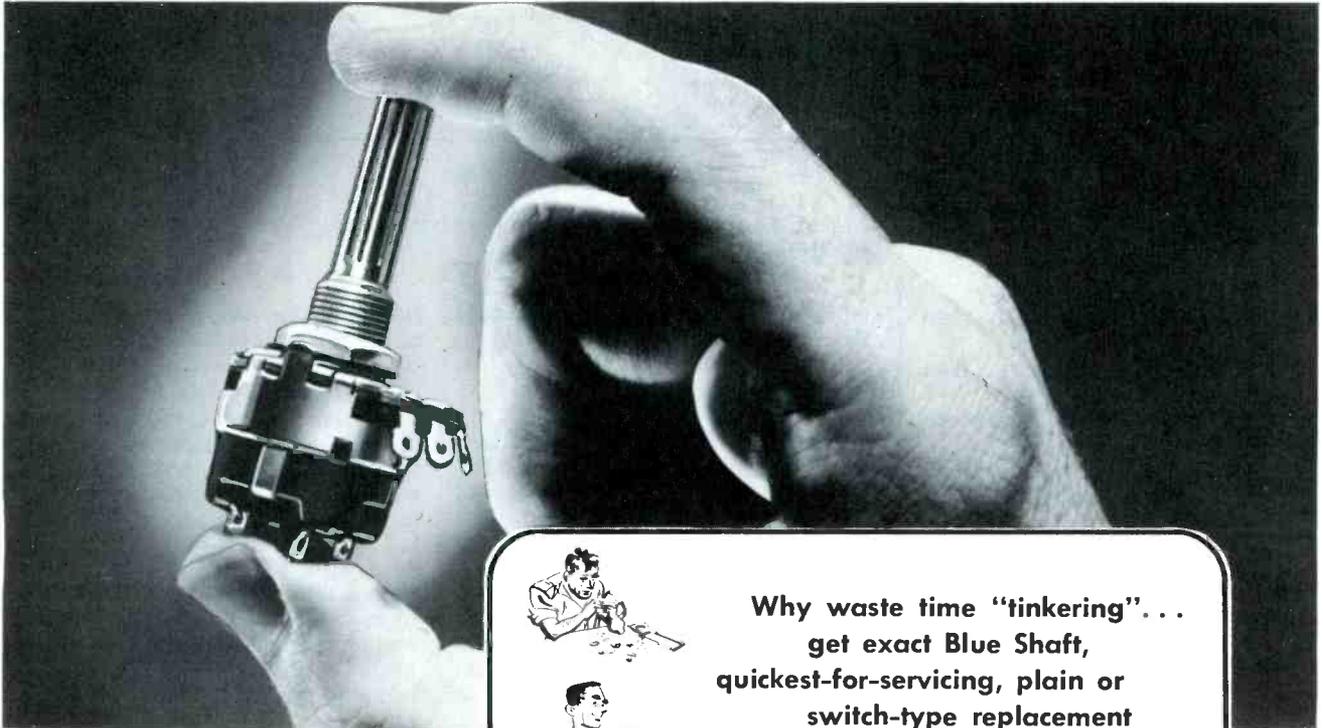
No fuss



No cuss



When you use Centralab Blue Shaft Controls



Why waste time "tinkering"...
get exact Blue Shaft,
quickest-for-servicing, plain or
switch-type replacement
controls for TV — AM — FM

Don't fuss with an assembly job the factory does better, faster, and guarantees—at no extra cost.

Yes, Blue Shaft Controls are your smartest service buy! Why? Because these *exact*, quickest-for-servicing replacements not only save you valuable bench-working time, but they're guaranteed *right* every time!

Why it pays to standardize on Blue Shaft

Centralab's famous Blue Shafts, plain or switch-type, are exclusive service items. The factory-attached and tested, high-amperage universal switches are *exact* for SPST — DPST or 3-wire. Blue Shafts are available in a range from

500 ohms to 10 megs in a wide variety of tapers and tapped units. All Centralab Blue Shaft Controls are packaged singly, or in handy kit assortments in plastic boxes of 12. You can also get a special metal cabinet containing 22 controls. NO EXTRA CHARGE for the cabinet.

Flexible "Fastatch,"† type KB, converts any plain type control with blue and white label on back cover to switch type . . . in seconds.

SERVICE ENGINEERS — here's more good news — 26 new Blue Shafts added in '53 line!



Blue Shafts give you exactness plus LOW COST

Cat. No.	Ohms Max. Resistance	Taper	Circuit Location	List Price
B-60	500,000	C-2 (audio)	Volume or Tone	\$1.00
B-60-S*	500,000	C-2 (audio)	Volume or Tone	\$1.50
B-70	1 megohm	C-2 (audio)	Volume or Tone	\$1.00
B-70-S*	1 megohm	C-2 (audio)	Volume or Tone	\$1.50

*Switch Type †Trademark

Centralab

A Division of Globe-Union Inc.
942 East Keefe Avenue, Milwaukee 1, Wisconsin
In Canada, 635 Queen Street East, Toronto, Ontario

Lead-ins

by W. WILLIAM HENSLER

The transmission line can be considered as a necessary evil. It is necessary in that it must couple the signal, which is picked up by the antenna, to the receiver. It is an evil since it provides attenuation of the signal. The problem which must be overcome in any installation is to provide this coupling with the least amount of signal loss that is possible.

The frequencies employed in UHF transmission result in greater losses in transmission lines than are experienced in VHF. With this in mind, several tests were performed during our field survey to determine what types of line could be recommended for UHF use. These tests fell into three main categories which are as follows: (1) Comparison of losses with several types of lines, each having the same length and tested under as nearly identical conditions as possible. (2) The effect of adverse weather conditions on each of the various types of lines. (3) The effect of mismatch between the antenna and transmission line and/or between transmission line and receivers.

Three basic type lines were employed in these tests. These were the punched 300 ohm flat twin-lead, the tubular twin-lead and the open wire transmission line. Figure 1 shows samples of these types. Type A in Figure 1 is the punched 300 ohm flat twin-lead, B, C and D represent the tubular twin-lead types and E is the open wire transmission line.

As would be expected, the test performed under category 1 followed very closely the readings which would be obtained by calculating the losses using the published attenuation figures for each type of line. Most open wire lines are stated to have an attenuation of around 1 db per 100 feet at the center of the UHF band. Our tests verified this low attenuation figure.

There are several disadvantages to the use of this line which will be brought out later. However,

it should be said at this time that in those cases where it is necessary to run an exceptionally long lead, this type line should be employed. Such a condition would be where a residence may be directly behind a cliff or hill, making it necessary to mount the antenna at considerable distance from the home. By using the open wire line for this application, a minimum of attenuation would be experienced.

The twin-lead providing the least attenuation of the remaining types is the punched 300 ohm flat twin-lead. This lead proved to be the easiest to handle due to its small size and flexibility. It is easy to mount and since insulators are readily available for this type of line, no difficulty is experienced in this respect. Several disadvantages, however, are evident in the use of this type of lead-in. These will be discussed later under adverse weather condition tests.

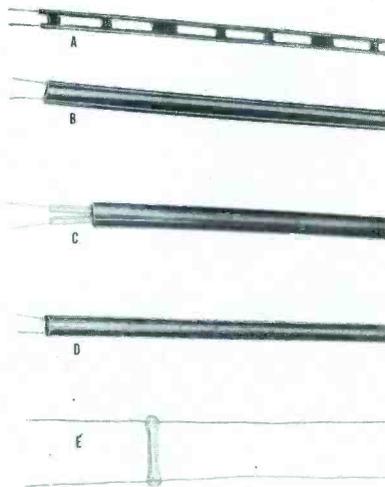


Figure 1. Five Transmission Lines: (A) Punched 300 ohm Flat Twin-Lead (Don Good, Inc.); (B) 300 Ohm Tubular Twin-Lead (Amphenol); (C) ATV-270 Line (Anaconda Wire and Cable Co.); (D) 300 Ohm Tubular Twin-Lead (Atlantic Wire and Cable Co.); (E) Open Wire Line (T.V. Wire Products Co.).

The tubular twin-lead types, being represented by B, C and D in Figure 1, have a slightly greater attenuation than that of the previously mentioned type. Again this was substantiated by tests made during our field survey. This type of line is very rugged and is much less affected by aging and weather conditions than the punched 300 ohm flat twin-lead. It is more difficult to handle, however, at the time of installation. This will be discussed at greater length under Installation Procedure.

Much data has been published concerning the effects that wet lead-in has on UHF reception. In order to present factual data on this subject, we performed tests as was previously mentioned under category 2. Since we did not have a means of artificially aging the line, most of our tests were made using a clean, dry line versus a wet line, keeping all other factors constant. Knowing that reception during a rain would differ from that during normal conditions, it was decided to set up an artificial wet line test. In this manner, the effect of wetting the line would introduce the only variable in our readings. The following procedure was employed to perform these tests.

A clean, dry line was connected to the antenna, the antenna was properly orientated and a relative field strength reading was taken. The lead-in was then disconnected at the field strength meter end and water was poured over the line for 25 feet of its length. Another reading was then taken which indicated the additional loss caused by the wet line. The line was then wiped dry and a reading was again taken in order to compare the attenuation with that of the clean, dry line.

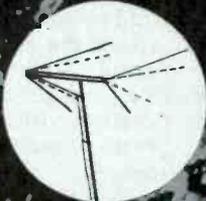
This test was first performed on the open wire line but produced so little difference between the wet and dry conditions that generally speaking it can be said that the attenuation provided by open wire line is the same under both wet and dry conditions. Just recently sev-



Corner Reflector No. UHF 100



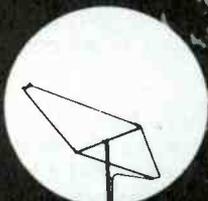
"Bowtie-Flector" No. UHF 600



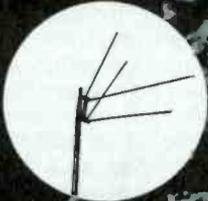
Ultra T-Bell No. UHF 500



YAGI No. UHF 300 Series for Channels 14 to 83



Rhombic No. UHF 200



"Double-Vee" No. UHF 10



When there are new worlds to conquer, JFD will do it!

Now our engineers have combined the famous JFD VHF Jetenna and UHF bowtie-antenna into a miracle performer that pulls in all channels—from 2 to 83. Use it with the especially developed filter network* for perfect reception, completely free of inter-spectrum interference. Pre-assembled construction, all aluminum, even to solid aluminum dowels.

Write for the new 1953 JFD dealer almanac on your letterhead—36 pages of the widest TV antenna and accessory line in the industry.

*optional



it's out of this world!

new, VHF-UHF All-Channel Antenna —the Jet 283

one antenna—one transmission
line for all channels from 2 to 83

JFD MFG. CO., Brooklyn 4, N. Y., Bensonhurst 6-9200

world's largest manufacturer of tv antennas and accessories

Burton browne advertising

eral companies have announced an open wire line with fairly close spacing. This type line was not available to us at the time our field survey was conducted. It would appear, however, that the attenuation caused by a wet line would increase as the spacing of the wires decreased. Even so, the attenuation would be far less than a line having a solid spacer.

Our next test was made on the punched 300 ohm flat twin-lead. A clean, dry lead-in was installed and a reading of 350 was obtained. We then wet 25 feet of the line and a reading of 165 was obtained. We then wiped the line dry and found that the reading increased to 240. As can be seen, there is a considerable reduction in signal when the line is wet. The loss, which is experienced with this type of line when wet, is brought about by the fact that the water can actually be deposited between the two lines. This places the moisture in the concentrated field existing between the two lines, resulting in a greater loss. In an actual installation dust, dirt and soot can deposit on the line in such a manner as to increase the attenuation. It is probable, however, that the attenuation is less than that experienced in the unpunched, flat twin-lead, since there is much less area for the deposits to occur. The deficiencies just sighted are the only disadvantages to the use of this particular line, with the exception of what might happen as far as attenuation is concerned with normal aging of the line.

It would seem, then, that this line would be suitable for UHF use where it is possible to keep the line clean and dry. Such a condition might exist where a comparatively long length of line is required inside a building or structure of some sort. Of course, it would not be practical to use a different type line for the external portion of the lead-in and then use only a few feet of the flat line to complete the installation. The stiffness, however, of some of the other types of line, particularly the tubular twin-lead, makes it rather difficult to handle inside the home. This brings up a point whereby the use of the punched 300 ohm line could be used to an advantage. In those cases where a plug-in arrangement is employed for connecting to the antenna service, this punched line could be used between the socket and the TV receiver since, for the most part, it will be kept clean and dry. It would be much easier to conceal and is less

apt to be broken when the TV set is moved for housecleaning purposes or to achieve a better angle for viewing.

The next wet line test was performed on the tubular type twin-lead. The same procedure as previously outlined was used. A length of clean, dry tubular twin-lead was installed and a reading of 300 was obtained. Twenty-five feet of the line was then wetted down. This resulted in a reading of 260. We then wiped the line dry and the reading returned to 300. No special care was taken in drying the line. The fact is, it was a single wiping process. We merely held a towel tightly around the line and pulled the line through only once.

It is interesting to note that in the case of the tubular twin lead the reading returned to the original reading after the line was wiped dry. Such was not the case with the punched flat line. The reason for this is fairly obvious. It was impossible to completely get the line dry on the edges of the punched holes. Another point was noted, in that the water had a greater tendency to run off the tubular line. In the case of the flat line, the water would collect in the punched out sections, which, of course, further decreased its efficiency. In summarizing the tests just outlined, it is apparent that the open wire and tubular twin-lead transmission lines are less affected by foul weather conditions. Thus, any installation which will be subjected to such conditions should employ a tubular or open wire type lead-in.

On those installations where fringe area UHF reception is the prime objective, it is recommended that the lead-in be wiped clean at regular intervals, and particularly if a decrease in signal pickup is noted. Such a cleaning process is especially recommended in the Spring in those areas where cold weather is experienced in the winter. Such installations would be subjected to soot deposits from winter heating plants which might be detrimental to optimum reception conditions. A more regular cleaning procedure might be required on installations that are subjected to more abnormal conditions, this being where excessive dust or dirt might be deposited on the lead-in itself. The effect of these dirt deposits can only be definitely determined with experience. Any increased attenuation might, in fringe area locations, mean the difference between the satisfactory or unsatisfactory reception of the

UHF signal. The cleaning of the transmission line is a point to keep in mind, particularly if it is necessary to repair any portion of the antenna installation, such as the antenna itself, or the rotator. If such work need be done, the line can very easily be wiped clean at that time.

The tests performed under category 3, that of checking the effects of mismatch, were rather limited. We did make a few tests, however, to determine if there was a noticeable effect in using a transmission line that is not matched to the antenna and/or the receiver. Practically all of the antennas which we used were designed for 300 ohm balanced operation. Since most of the lines we employed were of this type, no comparative tests could be made using the 300 ohm lines. We did, however, employ a 450 ohm open line and found there was considerable losses due to mismatching between the transmission line and the antenna. To sight an example, at one test position the open wire was connected to an antenna designed for 300 ohm operation. No attempt was made to provide for matching of the line to the antenna. The reading obtained with this setup was just one-half of that obtained when using a 300 ohms tubular line which, of course, was properly matched. Considering the greater attenuation afforded by the tubular line over that of the open wire line, the signal obtained under this mismatch condition could have been more than doubled by properly matching the line to the antenna and receiver. The amount of loss, of course, is dependent upon the degree of mismatch, the greater the mismatch, the greater the loss.

It should be pointed out that all of the previous tests were made without regard to losses caused by the proximity of the lead-in to the building or mounting accessories. These are covered in the next section under Installation Procedure.

INSTALLATION PROCEDURE -

For the most part, the installation of the previously de-

◆ ◆ Please turn to page 111 ◆ ◆



Figure 2. Insulator Standoffs Mounted on the Tower.

DEALERS GETTING WESTINGHOUSE TUBES PROFIT FROM HEAVY LOCAL ADVERTISING AT NO COST

Service dealers are getting powerful local advertising support from new Westinghouse RELIATRON™ Tube Distributors. In cities now served by Westinghouse Distributors, dealers get local newspaper advertising, a complete kit of store display and imprinted mailing material.

All of it—local ads and kits—are designed to build TV-radio service business in the dealer's local area.

Best of all, none of it costs the dealer a penny!

You can get your store listed in two local newspaper ads at no charge, and get a kit to boot. If Westinghouse Tubes are now sold in your area, see your Westinghouse Distributor and take advantage of this \$900-worth-of-advertising-at-no-cost offer.

NEWSPAPER ADS



COMING YOUR WAY

If Westinghouse Tubes are not yet distributed in your area, be patient. Distributors are being established in all market areas as fast as product availability and good service permit.

You'll soon have the chance to buy RELIATRON Tubes. Keep this tremendous opportunity in mind: you'll get newspaper advertising at no cost! Imprinted material for mailings! Imprinted signs for your window!

All of it is local advertising which sells your service in your own area where it counts.

For the name of your Westinghouse Distributor, or the approximate date when Westinghouse Tubes will be available in your area, drop a postal card to Dept. K-203 or have your regular distributor contact Dept. K-203 for information on how he can better serve you.

YOU CAN BE SURE... IF IT'S
Westinghouse

RELIATRON TUBES
T M

WESTINGHOUSE ELECTRIC CORPORATION, ELECTRONIC TUBE DIVISION, ELMIRA, N. Y.

ET-95013

the USE of

UHF Converters

by MERLE E. CHANEY

How well do UHF receiving units operate in practical applications? Is the picture and sound comparable to that provided by VHF transmission? How about drift and ease of tuning? Will UHF TV assume a position comparable to that held by VHF? These and innumerable other queries continually arise as the result of the accelerated pace of UHF in the television field. It was hoped that our experience in using the equipment during our South Bend field survey would give substance to any answers pertaining to these questions.

Our experiments involving the use and operation of UHF receiving devices essentially took two forms. The first was concerned with operating the equipment under conditions similar to those experienced in the homes. Figure 1 illustrates this type of operation. The second phase of the tests were made under less favorable conditions. These were conducted entirely out-of-doors, employing the required portable equipment. Figure 2 shows one of the test setups employed in the field.

The first phase of the tests was made at a location seven miles from the transmitter. In order to



Figure 1. Operating UHF Receiving Equipment.

make the tests complete, we had on hand a variety of receivers and UHF converter units. Figure 3 shows some of the converters and receivers which were used.

For our tests, we also installed UHF tuner kits in applicable receivers and compared their operation with factory installed units. Comparison was further noted between receivers using built-in UHF tuning units and those requiring the use of an external converter. UHF strips were added to those sets that incorporated tuners which would accommodate them. The sets were then checked under actual operating

conditions. In this manner we were able to employ several types of UHF receiving devices, set them up for operation, familiarize ourselves with their operation and individual characteristics, and note their effectiveness in providing UHF reception. Without qualification, we found that every combination provided highly satisfactory results.

This now brings up a point as to what system should be employed to receive UHF signals. Receivers using turret-type tuners for which UHF strips are available, obviously can utilize this system for UHF reception. It exhibits certain advantages from the standpoint of economy and simplicity of operation. A strip can be placed in the tuner, its oscillator tuning slug adjusted as required, and thus provide operation having the same ease of tuning as exhibited in VHF. Additional UHF strips can be substituted as signals from other UHF stations are made available. The limitation to this system, however, results from the fact that there is a maximum number of strips which can be added to a given tuner. However, it is not expected in the near future that the number of stations providing service in only one given area will exceed



Figure 2. Field Testing UHF Receiver Using Portable Equipment.



Figure 3. Some of the Converters and Receivers Employed During Tests.

the maximum number of strips and therefore this limitation is not a major factor at present.

Receivers capable of accommodating UHF kits were found to function very well. Extra switching is frequently employed with the kit-type units to provide switching from VHF to UHF reception. The switch may be on the front of the cabinet in the form of a separate control or concentric with a front panel control shaft. In some cases the switch may be placed on the back cover of the receiver, close to the top or side for convenient access to control its operation.

In most of the applications of UHF tuner kits, the design is such that the UHF output is applied to the VHF tuner input by means of a switching device, with the VHF input tuned to receive a channel 5 or 6 signal. The VHF tuner is switched to either of these channels upon which no signal is available in that given location. To facilitate this operation, and to insure that either channel may be employed, the converter output usually is designed with a 12 megacycle passband characteristic. Thus comparable reception should be obtained at either channel 5 or 6 position of the VHF tuner.

For the purpose of experimentation, we attempted to receive the converter output at channels 4 and 3 position of the VHF tuner. It was found that, in strong signal areas, picture and sound were received, but of inferior quality and the gain was down over that provided in channel 5 or 6 position. Since such a circumstance may be encountered in practice, particularly when the user is unfamiliar with the operation of the units, it is advisable to insure that the customer be provided with proper operating instructions.

In order to see clearly why reduced efficiency results from operation of the converter into an improperly tuned VHF tuner, observe the illustrations in Figures 4A and 4B. Note the broad response characteristic of the preselector as compared to the narrow passband of the output stage. Thus, the preselector circuits, in most instances, have sufficient band pass to allow for a moderate amount of mis-tracking with but little attenuation of the incoming signal. Thus, by means of the converter tuning control, it is possible to shift the resultant beat or IF frequency over a wide range. However, the fixed tuned output stage of the converter can accept, without

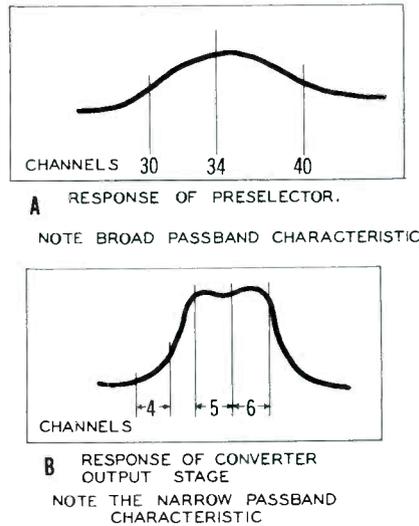


Figure 4. Typical Passband Characteristics of Preselector and Converter Output Circuits.

attenuation, only frequencies falling within the frequency spectrum of channels 5 and 6.

In line with the experiments on converters and receivers, we arrived at several conclusions. One of these concerned stability. Under actual operating conditions, we observed the stability of the units under test to be apparently equal to that of VHF tuning systems. The time necessary for a UHF unit to stabilize itself was only very slightly longer than the warmup time of the receiver. We felt, therefore, that stability did not present a problem to the degree as to noticeably effect satisfactory UHF TV reception. All receivers used for these test, however, were of the intercarrier type which are not as critical to oscillator drift as a receiver employing a separate sound channel.

Another item of concern which we encountered during our tests is one of greater importance than indicated at first glance. It has to do with the connecting of antenna leads to the converter and receiver. First of all, most of the receiving systems now employed for VHF-UHF reception utilize separate terminal connections for VHF and UHF input leads. This presents no problem when two lead-ins are used. However, as is frequently the case, it may be desirable to use a single lead-in from the antennas to the receiving equipment. This is a feature of most of the all-channel antennas, and from the standpoint of simplicity, economy and appearance is very desirable. In order to connect this single transmission line to the VHF

and UHF inputs, it is usually necessary to employ a matching arrangement. One such unit currently available is the VEE-DX "Mighty Match*". If a unit of this nature is not employed, it would be necessary to manually switch the common antenna lead to VHF or UHF terminals depending upon the service desired. These matching units automatically perform the switching electrically. Drawings of this antenna matching unit are shown in Figure 5. When employed at the antenna itself VHF and UHF antennas may be matched to a single transmission line. At the receiving equipment another matching unit is inserted to electrically differentiate between the UHF and VHF signals. Observe that there are 6 terminal points on the matching unit. Their function is illustrated by comparing their purpose to that of a double-pole double-throw switch. The common lead-in is connected to the center terminals while VHF leads are connected to one end and UHF leads to the other.

Figure 6 shows two ways in which transmission lines may be connected to a VHF-UHF television receiver. Figure 6A is the usual hookup employed when two lines are used to feed from separate UHF and VHF antennas. Figure 6B shows the connections needed when a common transmission line is employed. The matching unit electrically connects the desired input to the appropriate terminals of the receiver.

Figures 7A and 7B illustrate similar methods of connecting a common or separate lead-in to the receiving equipment when a converter unit is employed in conjunction with a VHF receiver.

In many areas, it is desirable to employ a booster for VHF reception and a converter unit for UHF reception. The drawings in Figure 8 show the connections required be-

*Trademark of LaPointe Electronics Inc.

◆ ◆ Please turn to page 96 ◆ ◆

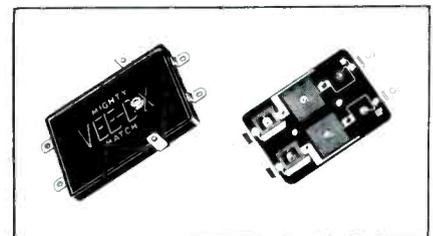


Figure 5. VEE-DX Antenna Lead Matching Unit.

**FOR TELEVISION
RADIO
RADAR
INSTRUMENTS
CONTROLS
AVIONICS**

BUSS

The **One** Source
For Any Fuse You Need

TAKE advantage of the most complete line of fuses in the industry. Backed by the world's finest fuse research laboratory . . . constantly testing, designing, improving! For 37 years BUSS fuses have been furnishing unfailing electrical protection. Today, because of these high standards, their quality is unquestioned.

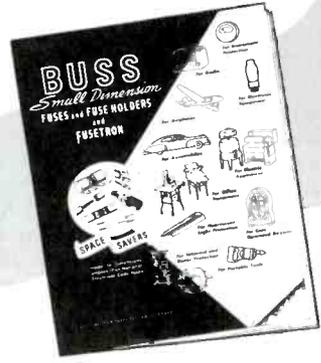
That's why Manufacturers and Service Men the country over have discovered that they can rely on BUSS fuses to operate properly under service conditions.

**FUSES
FUSE CLIPS
FUSE BLOCKS
and
FUSE HOLDERS**

It's Good Business to Use BUSS Fuses For Sales and Service

When you install or sell Buss fuses you can be sure they will operate properly — since each individual BUSS fuse is tested electronically to make certain it is right in every detail.

Then too, the BUSS Trademark is known to your customers. The millions of BUSS fuses used in homes, plants, autos, television and electrical appliances made the BUSS name stand for fuses of unquestioned quality. So when you add it up, the BUSS Trademark protects your profits and reputation as surely as BUSS fuses protect the user.



Bulletin SFB gives complete facts on BUSS SMALL DIMENSION FUSES
If you'd like a copy, just write . . .

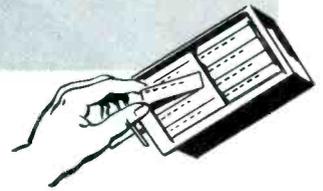
BUSSMANN MFG. CO., UNIVERSITY AT JEFFERSON, ST. LOUIS 7, MO.
DIVISION OF MCGRAW ELECTRIC COMPANY

BUSSMANN MFG. CO. University at Jefferson
ST. LOUIS 7, MO. (Division McGraw Electric Co.)

STRIP installation

by W. WILLIAM HENSLER

THE OPERATION AND INSTALLATION OF STANDARD COIL UHF STRIPS



For several years many television manufacturers have been advertising that their sets are adaptable to UHF reception. Most of these employ a turret type tuner which allows for the removal of VHF strips and the insertion of UHF strips. The Standard Coil tuners, all of which are of the turret type, is such a tuner.

Those who have not had actual experience, whether it be a consumer or the service technician, might have a tendency to adopt a "show me" policy concerning these claims. Since so much must be accomplished by these "little magic" strips, such thoughts can be considered as normal. Frankly, our field crew felt somewhat the same way and we were quite anxious to install some UHF strips so that we could check the procedure as well as the final operation. In order to do this we acquired some Standard Coil UHF strips and made installation in receivers as well as in our Simpson 488 Field Strength Meter.

Before describing the actual installation procedure, it might be well to analyze the circuits employed in the strips themselves and associate them with the circuits in the tuner itself. First of all the strips provide for a double conversion process to obtain the desired IF output. Since only one section of the 6J6 oscillator-mixer tube can be used as an oscillator, this double conversion process must be accomplished through the use of one oscillator. This is done by selecting the desired harmonic of the oscillator to perform the first conversion while the fundamental of the oscillator facilitates the second conversion. A schematic of the antenna and oscillator-converter strips is shown in Figure 1. Note that the only connection, other than those accomplished through the turret connector contacts, is the coupling link between the harmonic generator (R6, C9 and 1N64) and the first mixer crystal. This connection is accomplished by means of a prong

on the oscillator converter strip which engages a small clip on the antenna strip. Care must be taken to see that this connection is made when installing the strips. This will be covered in greater detail later under the installation procedure. The connecting prong can be seen in Figure 2 which is a photograph of a set of 34R UHF strips.

This brings up a point of great concern on any installation. What strips need be obtained for a given Standard Coil tuner? First of all, as would be expected from our experience with VHF strips, the number (such as 34 in the above mentioned strips) indicates the channel number for which the strip is designed to operate. The letter indicates into which tuner that the strip is designed to be installed. For example: The 34R is designed to operate on channel 34 in a tuner which incorporates "R" strips. Thus, the strip that is installed in a tuner should bear the same letter as those originally used. There is one exception to this, and that is the case of those tuners which employ "F" strips. These tuners require the use of UHF strips lettered "G." Chart "A" may be used as a guide to determine the proper UHF strip required for the various Standard Coil Tuner models.

Some of the early model Standard Coil tuners did not have a letter designation on the coil strips. In the event that such a tuner is encountered, check to see if the tuner series number is stamped on the ends or sides of the tuner. If not, check the manufacturer's tuner part number, and order strips from the

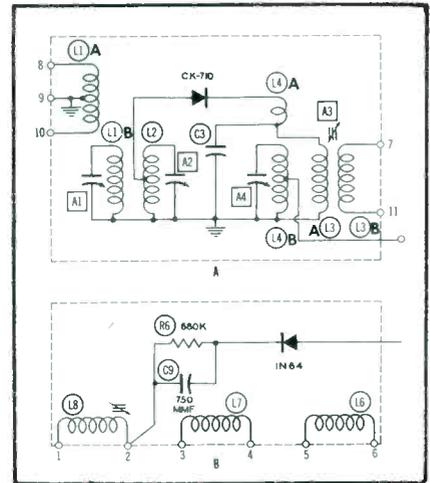


Figure 1. Schematic of Standard Coil UHF Strips. (a) Antenna Strip. (b) Oscillator Converter Strip.

manufacturer's distributor for that specific tuner.

Another thing which will be of great importance to the service technician is the merchandising set-up of the various receiver manufacturers for distributing these UHF strips. Many manufacturers assign a part number to their tuners which may or may not correspond with the Standard Coil tuner model number. If this is the case, UHF strips should be ordered from the manufacturer's distributor, using the receiver manufacturer's tuner part number. In some cases the receiver manufacturer may assign an actual part number for these UHF strips. Obviously in this case they can be ordered under this assigned part number. Regardless of the buying

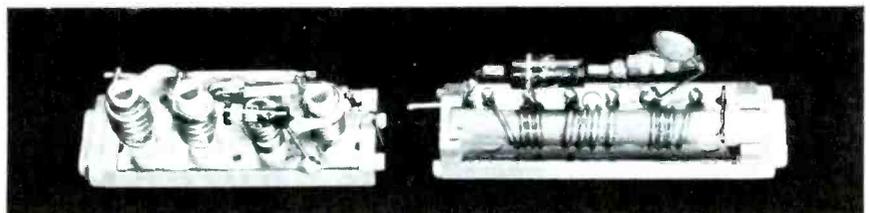


Figure 2. Standard Coil "34R" UHF Strips.

for the
new 12 volt
auto circuit

RADIART

announces its
6300 series...
an addition
to the full line of



Seal-Vent

RED SEAL VIBRATORS

Faster Starting

The exclusive RADIART design permits the briefest possible "Warm-up" period, thereby making the RADIART vibrators practically instantaneous starting. This added feature means greater performance.

Longer Life

There's more for your money in every RADIART vibrator—they last longer! Precision manufacture, using only the finest materials, assures long lasting, trouble-free performance.

Complete Replacement Line

RADIART has a CORRECT replacement vibrator for every original equipment vibrator. 12 Radiart vibrator types serve over 89% of all popular replacements. NOW...THE NEW 6300 SERIES IS READY FOR THE NEW '53 car MODELS with radios having 12 volt circuits.

Seal-Vented

Sealed at the factory to prevent the formation of an insulating film on the points while the vibrator is on the shelf...the sealed vent automatically opens when put in use to allow the vibrator to "breathe".



SUBSIDIARY OF



preferred by Servicemen Everywhere

THE RADIART CORPORATION CLEVELAND 13, OHIO

VIBRATORS • AUTO AERIALS • TV ANTENNAS • ROTORS • POWER SUPPLIES

PRICE REDUCTIONS

ON STANCOR YOKES and FLYBACKS

It's our way of saying, "Thanks for your confidence." Yes, thanks to you, the sale of these Stancor TV components has increased tremendously . . . our costs are lower . . . and we are passing these savings on to you.

These components are the same high quality, triple-tested units you have always received and come to expect from Stancor. At these new, low prices they are even better values than before.

DEFLECTION YOKES

PART NO.	OLD LIST PRICE	NEW LIST PRICE
DY-8	10.75	9.80
DY-8A	11.00	10.00
DY-9	10.75	9.80
DY-9A	11.00	10.00
DY-10	10.75	9.80
DY-10A	11.00	10.00
DY-11A	*	10.00
DY-12A	*	10.00

FLYBACKS

PART NO.	OLD LIST PRICE	NEW LIST PRICE
A-8128	10.50	10.00
A-8129	11.00	10.50
A-8130	11.00	10.00
A-8131	7.00	6.50
A-8132	*	10.50
A-8133	11.00	10.50
A-8134	11.00	10.50

STANDARD TRANSFORMER CORPORATION

3594 ELSTON AVENUE
CHICAGO 18, ILLINOIS



*New items: DY-11A is used in 172 models of 15 manufacturers. DY-12 is used in 160 models of 8 manufacturers. A-8132 is an exact replacement for Muntz TO-0031, used in over 300,000 sets. Ask your Stancor distributor for Bulletin No. 461 listing applications of these units, or write Stancor direct for your free copy.

**Stancor Transformers
are listed in Photofact
Folders, Tek-Files and
Counterfacts.**

tuner kit

Field Installation

by MERLE E. CHANEY

The rapidity with which UHF television is assuming stature in the commercial broadcasting field has resulted in a great number of television set manufacturers designing methods for current, or future, incorporation of UHF tuning systems in their receivers. Since successful UHF transmission is now on a commercial basis, little doubt remains in the minds of those producing present receivers that current designs must meet the demands of the consumers. With this in mind, many TV sets are now available which are capable of receiving any station within the receiving area, whether VHF or UHF. At the same time, it is obvious that various localities will be without UHF broadcasting facilities and the addition of UHF tuning systems in the receivers will represent an immediate unnecessary added cost to the consumer. It is noted, therefore, that a compromise is adhered to in the production of many of the current receivers. That is, new receivers may be purchased with built-in UHF tuning systems or with only VHF tuning provisions. The selection of either set may be made at the option of the buyer. Therefore it is anticipated that UHF converter kit installation in the field will be performed on many receivers.

One word of caution should be injected in reference to the use of

UHF kits in order to avoid unnecessary complications in the installation procedure. First of all, it should be determined that the kit is specifically designed to fit and operate in the receiver to which it is to be added. Some kits can be used in only the current productions, while others are also adaptable to a number of the older models. If the manufacturer of the converter kit specifically states which models can be adapted to UHF with built-in type units, needless time and expense can be saved in trying to install it in other models. For those receivers not adaptable to kit installation, the best solution is through the use of an external UHF converter.

Another point that should be checked prior to the kit installation, is to insure that the TV set is in satisfactory operating condition before any conversion work is attempted. Difficulties that might arise after the kit is installed could then be more easily diagnosed.

In many areas where UHF is expected, there may be some concern as to feasibility and profitable nature of kit installation. As to the time and facilities necessary to effect a conversion, few problems should exist. Obviously the first installation of a kit requires a little more time than that required for subsequent

operations of this nature. Close attention to instructions supplied with the unit is important in achieving the desired standard of performance.

Two of the receivers which were used during out tests in the South Bend area were equipped with UHF field kits which we installed ourselves. These sets were specifically selected in order for us to gain experience in making the installation and to gain first hand information on the operation and dependability of these units. These receivers were subjected to considerable abuse due to the necessity of transporting the sets during out tests. In spite of this, no failure of operation was noted, nor was it possible to detect any difference in the operation of these sets in which the kits had been installed, from those receivers which were factory equipped for UHF reception.

Contributing to the time factor is the fact that in most instances UHF converter kits may be installed in the customer's home. Only a few tools are required (these are usually carried in the tool kit). At the time the kit is installed, the antenna requirements can be determined and the necessary measures can then be employed to pick up the UHF signal.

A typical example of a UHF converter kit installation may be ob-

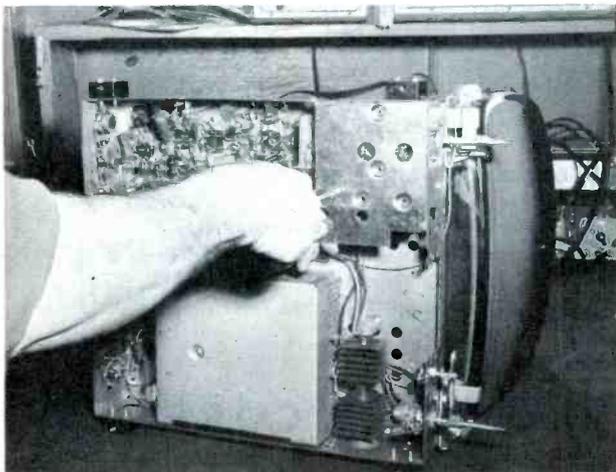


Figure 1. Preparing a Motorola Receiver for Kit Installation.

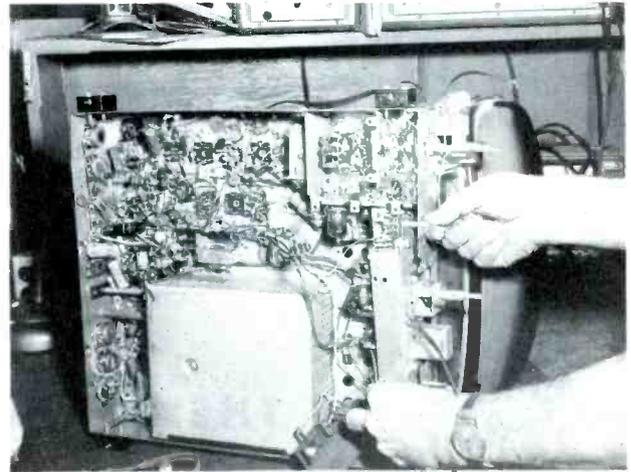


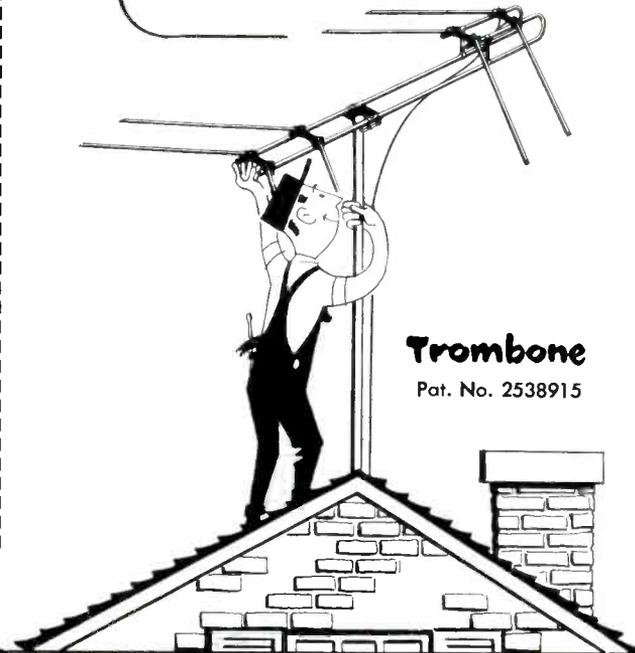
Figure 2. Placing the Motorola UHF Converter in the TV Chassis.

UHF for present
VHF installations

UHF-VHF for
new installations



Jazz Trombone
Pat. No. 2538915



Trombone
Pat. No. 2538915

**new WARD antennas give everybody
everything in television UHF and VHF!**

WARD'S newest, exclusive contribution to Television — the JAZZ TROMBONE — is a small, light-weight, auxiliary antenna designed for UHF only. When attached to any present day VHF antenna, it creates a complete UHF-VHF antenna. Low cost, streamlined, fully preassembled, easily installed. JAZZ TROMBONE is the ideal change-over auxiliary Antenna for all present installations.

For all new installations, nothing compares with the sensational, new WARD TROMBONE, engineered and designed to bring in all channels, all frequencies, both UHF and VHF, with one single antenna. — The WARD TROMBONE is the completely universal Antenna that provides clear, sharp reception in any location; outstandingly effective in fringe areas.

Write for Catalog Sheets

THE DIPLEXER



Another new WARD exclusive — the DIPLEXER — completely solves the problem of two lead-in lines, where separate UHF and VHF Antennas are used. — Simply connect the two lines to the DIPLEXER and extend one single line to the Television receiving set.



THE WARD PRODUCTS CORP.
DIVISION OF THE GABRIEL COMPANY

1148 EUCLID AVENUE • CLEVELAND 15, OHIO • In Canada: Atlas Radio Corp., Ltd., Toronto, Ont.

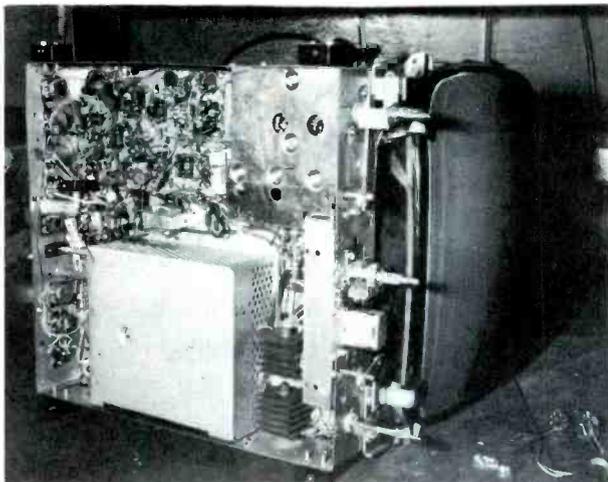


Figure 3. Bottom Chassis View of Motorola Receiver With UHF Converter Installed.

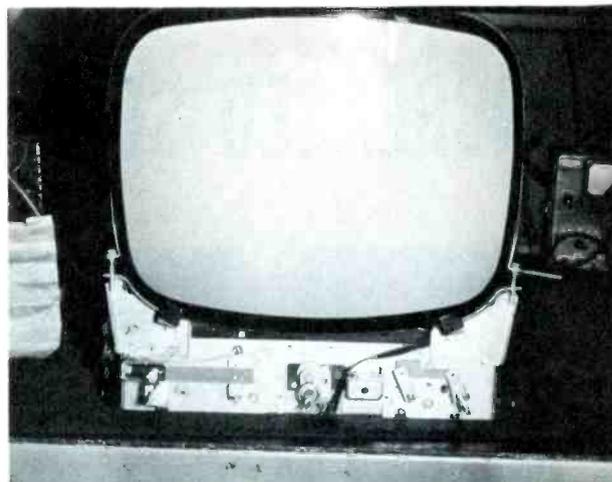


Figure 4. Front Chassis View of Motorola Receiver Showing Completed UHF Converter Kit Installation.

served in Figure 1. In this case, the receiver illustrated is a Motorola Model 17T11EC (Chassis TS -408A) and the kit is designated as TK19M.

Figure 1 shows the receiver chassis being prepared to receive the UHF unit. A cover plate on the front apron has been removed and the shield plate under the VHF tuner is being removed. The next step is the temporary removal of the RF amplifier tube in the VHF tuner to permit the UHF tuner to slide into position at the center of the front apron. The tone control was then removed and discarded. Also the linkage to the tone control shaft was temporarily removed. Since the leads to the control are connected to a multi-pin plug, no soldering is required at any time during the installation. Next, the screws holding the selenium rectifier nearest the center of the chassis were removed. This allowed the UHF unit to be inserted into position, as shown in Figure 2. Three transmission-type leads and one cable extend from the UHF unit. Two of these leads are for the VHF and UHF antenna inputs, while the third lead plugs into the VHF tuner input circuit. The cable lead is terminated in a multiple-pin plug which is inserted in the socket from which the plug connected to the tone control was removed. The cable provides the tone control circuit continuity and, in addition, applies 117VAC to the filament transformer and rectifier circuit.

Figures 3 and 4 show the UHF tuner completely installed in the Motorola chassis. The tone control linkage is again attached and another linkage is placed between the converter switch shaft and the VHF tuner shaft. The selenium rectifier

is remounted, the RF tube is reinserted and the bottom cover is replaced on the VHF tuner. When the chassis is reinstalled in the cabinet, the VHF and UHF terminal boards are fastened to the back panel on the cabinet and the control knobs placed on the shafts.

This installation requires several operations, yet, the work entailed in the process may be less than that required to replace a defective component. After a few kits have been installed, the time required to do the job will be reduced to a minimum.

Figures 5 and 6 show two other UHF tuners which are designed to be added to existing receivers in the field. Figure 5 shows the Crosley Converter kit (part #154927) which is designed to be added to Crosley Chassis 385, 386, or 387.

Figure 6 shows the Raytheon UHF-100P tuner which is designed to be added to Raytheon Models 17T1, 17T1A, 17T1B, 21T1, 21T1A, 21T1B or 21T3. For the addition of this tuner to other Raytheon sets employing a continuously tuned UHF tuner, an accessory kit is available, and must be obtained to make the installation.

In all instances of UHF converter kit installation, it is observed that the manufacturer of the unit has stressed in the design, a unit requiring a minimum of detailed operations to install it in a receiver in the field. Most of the kits do not require soldering operations during installation, since plugs, sockets and connectors are employed as much as possible. The exception to this is when a kit is designed to function in

some of the early production receivers, where UHF sockets and wiring facilities have not been incorporated on the set at the time of manufacture. In these cases, it may be necessary to solder in the connecting leads directly, or to mount sockets provided in the kit.

UHF kits may be considered to fall into two general categories: units employing separate controls from the VHF tuner and those using the same controls as the VHF tuner. Where common controls are employed, the VHF and UHF tuning mechanisms are linked by either gear or pulley devices, or a combination of the two. Many of the current production receivers are supplied with the UHF tuning mechanisms in position and require only the addition of the UHF tuner to the receiver. It is also noted that a number of sets have a UHF escutcheon mounted on the cabinet which is removed when a converter is installed. Thus, the cabinet design is maintained, while at the same time, the addition of a UHF tuner does not alter the general appearance of the set. Probably the chief point to remember when called upon to install a UHF converter in a television receiver, is to follow the

◆ ◆ Please turn to page 115 ◆ ◆

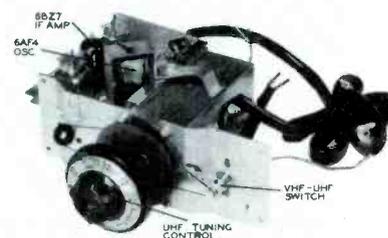


Figure 5. Crosley UHF Converter Kit.

INCREASED SERVICE BUSINESS 123%!



Miami TV-radio service dealer L. T. Sample proves that promotion pays off!

"Because of our summer promotion, June service sales were 194 per cent of May; July sales 223 per cent. August service will equal or exceed July. Newspaper ads, mailing cards, television spots, radio announcements—we used them all successfully."

LAURENCE T. SAMPLE
Electronic Television of Florida, Inc.
1003 S. W. 27th Avenue, Miami, Fla.

Follow L. T. Sample's lead . . . use G-E promotion aids to get more service business!

BEGINNING the first day you use them, these 1953 promotion helps work hard to bring you more service business—bigger profits! See your General Electric tube distributor for your copy of G. E.'s new catalog! Or write direct to *General Electric Company, Tube Department, Schenectady 5, New York.*



Now you can do it!

. . . with the sure-fire promotion aids described in General Electric's brand-new catalog for 1953—

- **Identification aids**, such as decals, clock, signs, and tube display cartons.
- **Advertising aids**, such as mailing pieces, newspaper ad mats, doorhangers, and streamers.
- **Business aids**, such as job tickets, calling cards, letterheads, and tube-test stickers.
- **Service aids**, such as tube puller, jumper cord, drop cloth, and shop garments.
- **Technical manuals and publications.**

You can put your confidence in—

GENERAL  ELECTRIC

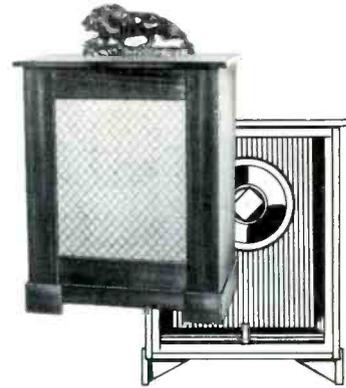


161-1A1



Audio-Facts

by ROBERT B. DUNHAM



Amplifiers, pre-amplifiers and phonograph pickups have been mentioned in previous Audio Facts articles, and their relation to distortion in high quality audio reproduction has been discussed to some extent. One thing is certain, loud speakers and their influence in sound systems cannot be ignored. If the speaker system, due to its own short-comings, cannot convert the electronic signal into sound satisfactorily, it is logical that no matter how well the amplifier and allied equipment operate, the sound output will not be satisfactory.

Since speakers and their enclosures are so important, much has been written concerning them. Also, constant research is being

conducted, and countless experiments are being made by both professionals and amateurs, in an effort to produce the ideal speaker system.

The number of people who strive for and appreciate high quality sound reproduction is growing rapidly. Many manufacturers are becoming increasingly aware of the importance of high quality audio in their products. Others are specializing in the manufacturing of high fidelity equipment.

Speakers, of course, are an important part in any equipment, but the growing use of high fidelity systems has created a lot of interest and activity concerning loud

speakers and their enclosures. The speaker system can be simple or complex, large or small, depending upon many things that must be considered if the best results are to be achieved. The whys and wherefores of these variations make up the important things we should know and understand when we select, install, or work with such equipment.

The most commonly used loud speaker is the familiar dynamic cone speaker. Dynamic units, with small plastic or metal diaphragms, designed for coupling to horns, are also employed but usually are found in PA installations and High frequency "tweeters."

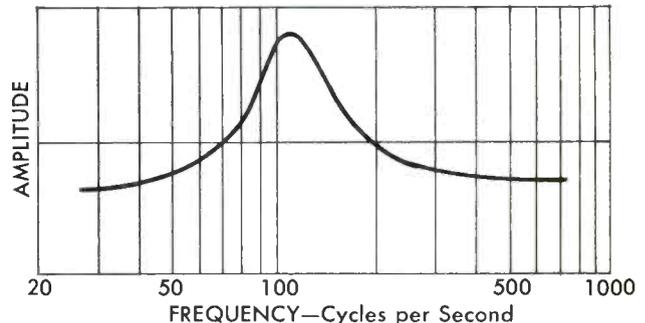
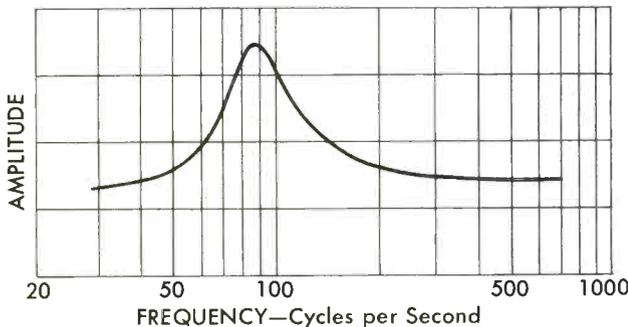
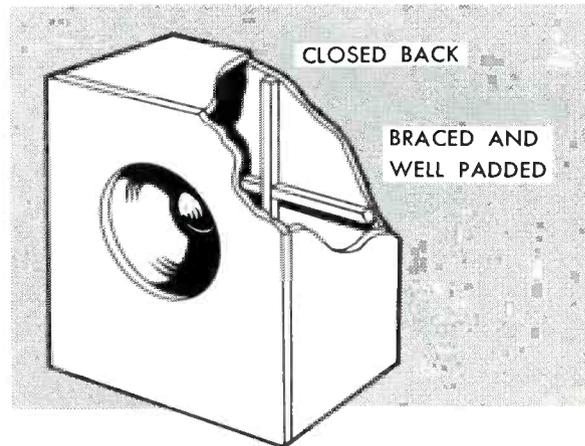
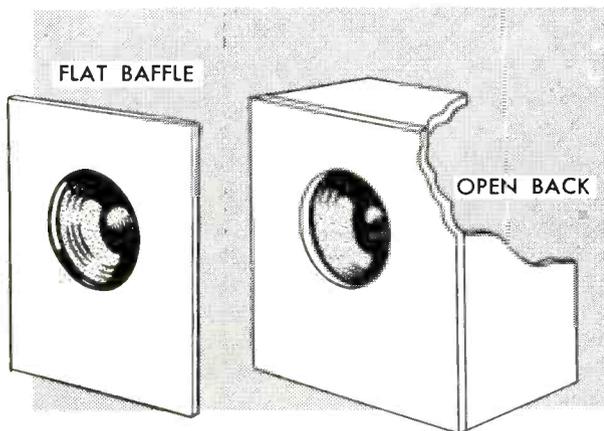


Figure 1. Open Back Enclosure and Flat Baffle with Typical Impedance Curve.

Figure 2. Totally Enclosed Enclosure With Impedance Curve.

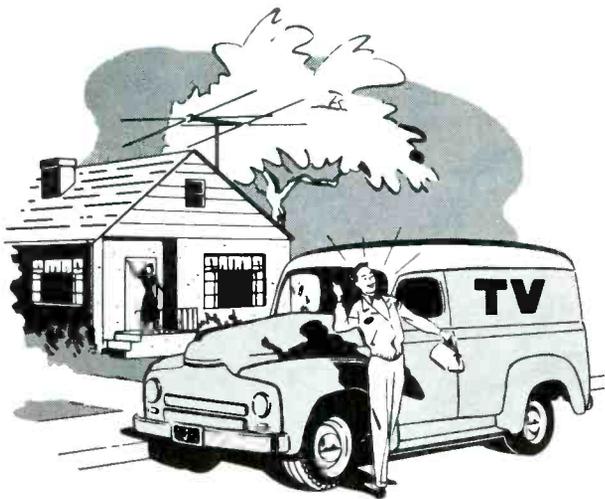
ASTRON

SAFETY MARGIN



CAPACITORS

Cut Callbacks!



When you install ASTRON Capacitors, you're insuring against call-backs, building your reputation for *reliable* service.

Through the use of an improved electrolyte, and an exceptionally high-purity anode foil—plus rigid quality control and exhaustive multiple testing techniques—ASTRON electrolytic SAFETY-MARGIN capacitors mean longer life and maximum performance under every condition. Unexpected surges of voltage, undue heat or moisture—conditions that might spell failure in an ordinary capacitor—rarely affect an ASTRON.

So next time ask for ASTRON—the capacitor with the "safety margin" that protects your service reputation. And ask for Astron Type AM molded paper tubular capacitors to complete your service job. *Individually tested—individually guaranteed.*

Depend On—Insist On



Write for Catalog AC-3 and
Name of Jobber Nearest You

Visit Astron at the IRE Show, Booth 4-707, Grand Central Palace

ASTRON

CORPORATION

255 Grant Avenue, E. Newark, N. J.

Several basic characteristics of cone type speakers must be considered when discussing loudspeaker systems. For instance, power handling ability is usually greater in larger speakers, although it also depends on such things as magnet size and general construction. Incidentally, size refers to the diameter of the cone, which is somewhat smaller.

The size of the cone usually has a bearing on the low-frequency response, since it takes power and the movement of a comparatively large volume of air to reproduce a low tone. The larger cone with its greater surface, contacts more air, making possible the movement of a greater volume of air with a given movement of the cone. Also, every speaker has a resonant frequency, which results in a hump in the response curve, and audibly as an accented "boom" in the low frequencies. The resonant frequency of the speaker has a great influence on how low the speaker can be made to respond. That is, the lower the resonant frequency the lower the response. Since it is easier to attain a low resonant frequency with the larger speakers it would seem that in general they are better in this respect.

On the other hand, smaller speakers can produce their maximum low-frequency response with a smaller enclosure. This is an advantage, since the smaller systems used in smaller rooms usually do not require the higher power output obtainable with the larger speakers.

Speakers are manufactured that have some, or nearly all, of the desired qualities, regardless of size. Therefore, physical size cannot be the only deciding factor. Some are designed to have a uniform full range response, which is sometimes practically achieved. Some are designed particularly to reproduce the low frequencies, as "woofers." Others to reproduce the highs, as "tweeters." As can be understood, these things are attained in varying degrees, by the various manufacturers of speakers, in a wide range of sizes and a wider range in price.

Some discussions and experiments would give one the impression that the limitations of the speakers are so great that we cannot expect to reproduce sound in a satisfactory manner. But we know that a high quality audio system can be made, using the correct speaker

system, which will afford the utmost listening enjoyment of the excellent program material available.

Speaker Enclosures -

Loudspeaker enclosures can be classified as:

1. Open back baffle.
2. Totally enclosed or infinite baffle.
3. Reflex or vented enclosure.
4. Horn.
5. Labyrinth.

These can be subdivided into various applications of the principles involved, but these are the chassis classifications. All have some advantages and disadvantages, due to their individual characteristics, which we will discuss to some extent here, and in more detail in later issues.

The most used loudspeaker enclosure is the cabinet of the usual radio, record player or tel-

◆ ◆ Please turn to page 94 ◆ ◆

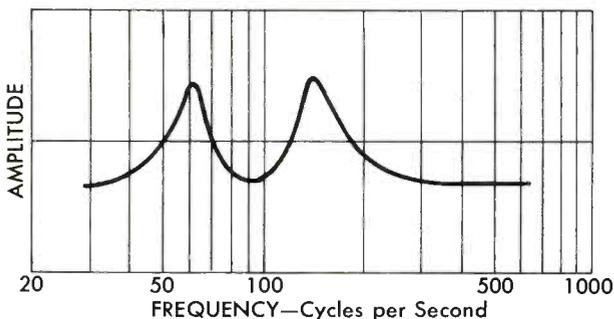
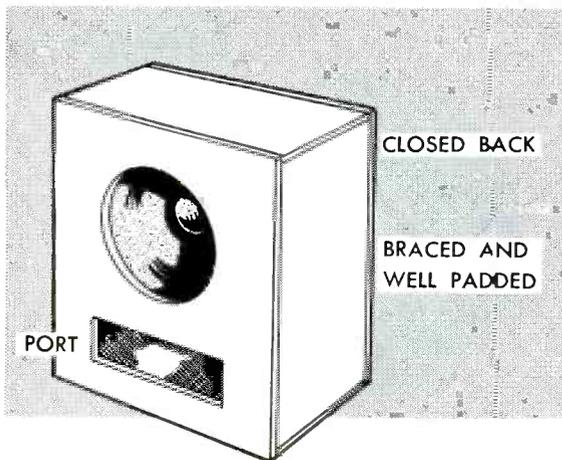


Figure 3. Reflex Enclosure With Impedance Curve.

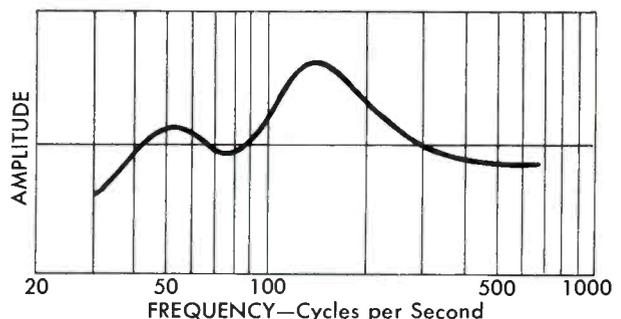
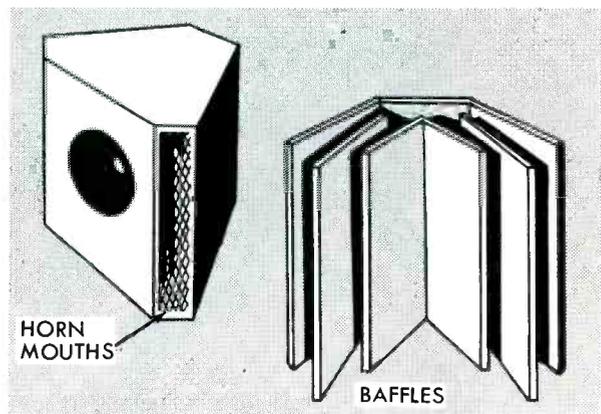


Figure 4. Folded Horn Enclosure With Impedance Curve.

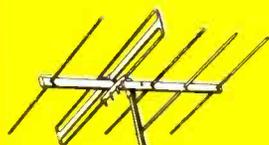
Dealers find
the **NEPCO** line

*Reduces
Stocks*

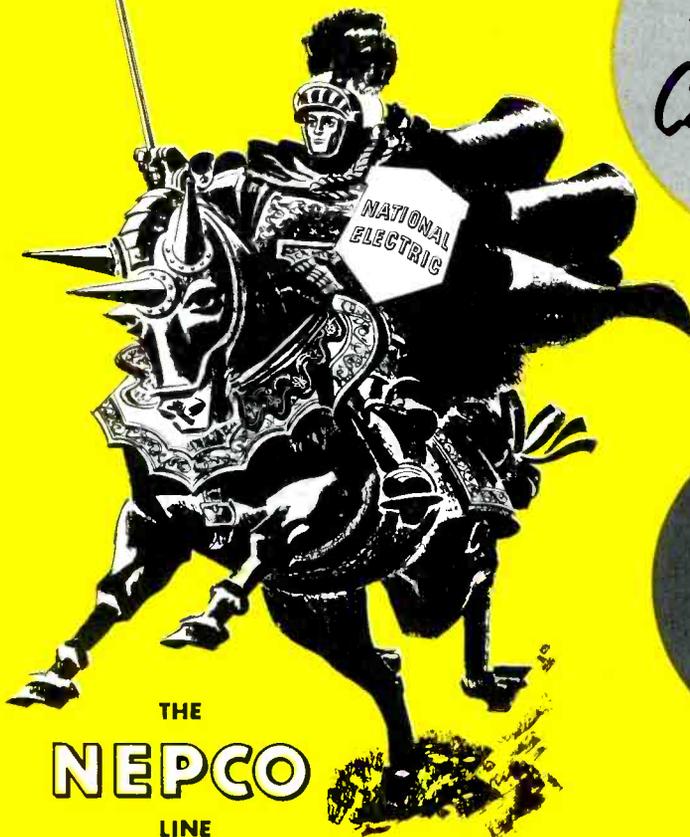
*Reduces
Call Backs*

*Increases
Goodwill*

*Increases
Profits*



MASTER OF THE
ELEMENTS



THE
NEPCO

LINE

INCLUDES:

- YAGI ANTENNAS • CONICAL ANTENNAS
- UHF ANTENNAS • MASTING • EAVE MOUNTS
- WALL BRACKETS • VENT MOUNTS • ROOF MOUNTS
- CHIMNEY BANDING • CHIMNEY MOUNTS • GUY RINGS
- BANDING & MAST CLAMPS • ADD-A-TOWER PLATES • TV WIRE

National Electric Products

RADIO AND TELEVISION DEPARTMENT, PITTSBURGH, PA.

**ORDER A BALANCED STOCK
FROM YOUR JOBBER TODAY**

**TV set owners want
a better picture, longer
*Here is the answer***

Today, TV set owners are demanding better reception. Often the *trouble is in the antenna installation, not the set*. A corroded antenna (and most antennas are corroded if they have been up a while) or cracked and crazed down-leads (and most polyethylene leads are faulty after 10-12 months) can cause a deteriorated picture. *Nothing* you do to the set can correct this condition. A *new and better* antenna installation is the answer.

The NEPCO Line of antennas and TV installation materials eliminates this condition.

It was designed to meet the pressing demand for *better* electronic equipment—with more built-in ruggedness and corrosion-resistance than any line now known.

The NEPCO line was designed with YOU in mind:

- Provides *maximum* number of installations with a *minimum* number of parts from jobbers. Your stocks are kept at a minimum.
- Its high quality eliminates costly call backs . . . saves you time, trouble and tempers . . . improves customer goodwill.
- Eliminates rust streaks—a common customer complaint.
- Provides *quicker* installations . . . goes up fast . . . easy to handle . . . easy to carry.

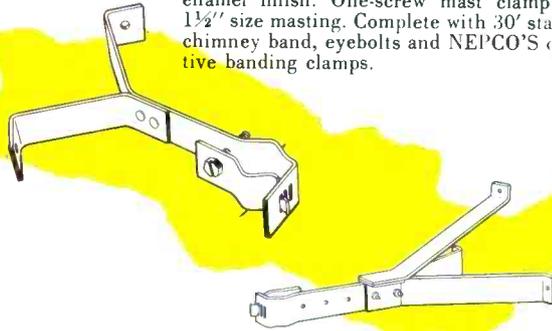
Remember, a better installation using better materials will insure more satisfied customers.

These other features will "spark" your TV sales:

- All mounts made of rigid, heavy gauge steel.
- Unique adjustable mast clamp with one-bolt mounting.
- Two 15' stainless steel chimney bands with each chimney mount.
- Over 100 installation combinations possible with minimum inventory.
- Slotted, hex-head bolts standard equipment . . . all zinc-coated plus baked-enamel finish.
- Exclusive antenna mast clamp with positive alignment in all planes.
- Patented imbedding type screw for positive electrical and mechanical locking.

CHIMNEY MOUNTS

Made of $\frac{1}{8}$ " x $1\frac{1}{4}$ " steel, zinc-coated plus baked-enamel finish. One-screw mast clamp adapts to $1\frac{1}{2}$ " size masting. Complete with 30' stainless steel chimney band, eyebolts and NEPCO'S quick, positive banding clamps.



WALL BRACKETS

Fabricated of $\frac{1}{8}$ " x $1\frac{1}{4}$ " steel, heavily zinc-coated with baked-enamel finish. One-screw mast clamp adjustable to $1\frac{1}{2}$ " masting. Hex head slotted bolts to speed erection time.



**SPACE SAVER—
BIG, FLAT BOXES FOR TV WIRE**

NEPCO "Zee" Line comes in strong, flat cartons. Easy to stack, easy to handle, easy to pull out for cutting to any desired length. NEPCO "Zee" Line is low-loss UHF, TV receiving wire.

**THE NEPCO CONICAL ANTENNA
IMMEDIATE
DELIVERY**

Superior mechanical features maintain electrical effectiveness and performance—constantly—regardless of conditions. Aluminum elements are permanently secured with patented "vibration-proof" imbedding screws.

- All parts heavily zinc-coated plus baked-enamel finish.

RCA VoltOhmysts*

*outsell all other
VTVM'S*

RCA WV-97A
SENIOR VoltOhmyst
\$67.50 Suggested
User Price

RCA WV-87A
MASTER VoltOhmyst
\$112.50 Suggested
User Price

RCA WV-77A
JUNIOR VoltOhmyst
\$47.50 Suggested
User Price

Because they're factory-calibrated under laboratory conditions...incorporate more features...have unusual accuracy and stability...in short, offer you more for your money—RCA VoltOhmysts *outsell all other makes of vacuum-tube voltmeters.*

All RCA VoltOhmysts employ a degenerative bridge circuit to compensate for line-voltage changes...a sturdy 200-microampere meter movement electronically protected against burn-out...large,

easy-to-read scales...metal shielding against external fields...and have an input resistance of 11 megohms on all dc ranges.

Before you buy a vacuum-tube voltmeter, be sure to get the full details on the RCA VoltOhmyst best suited to your needs. See your RCA Test Equipment Distributor today...or write RCA, Commercial Engineering, Section 67CX, Harrison, N. J.
*Tmk ®



RADIO CORPORATION of AMERICA
TEST EQUIPMENT
HARRISON, N. J.

Dollar and Sense Servicing

SNORING. Instead of rise-and-shine chatter, listeners who tuned in on a San Mateo, California, radio program one morning got an earful of snoring. Someone called the sheriff, and he in turn sent a deputy over to the station to investigate. Finding the disc jockey sound asleep beside the open microphone, the deputy completed his assignment by shaking the young fellow and telling him to rise and shine.

MIXING. What seems to be an ideal combination of two non-interfering businesses is operation of a gas station in a country-crossroads community and operation of a television and radio servicing business in between pumpings. The only requirement is having a wife to run the pumps while out on calls. A working example of this logical mixing of jobs exists in the town of Saddle River, New Jersey.

MILLIONS. It is estimated that for every \$100 million worth of electronic equipment purchased by the military, \$1 billion must be spent on maintenance before it wears out. Contrast this with the servicing picture for radio sets, where servicing rarely reaches a dollar-for-dollar basis even though the sets last four to five times longer than in military service. As an extreme example, one well-known make of auto radio is reported to have run for 16 years, without even having its cover pried off. Our own experience with this same make of auto set has given ten years, and it's still running.

TUBENAPPING. In broad daylight on one of the most heavily travelled streets in New York City, a truck driver was extracted from his truck and hauled away in one direction, while his truck with a half-million dollar (retail value) cargo of radio and television tubes was driven off in another direction. The loot in the carefully planned and executed crime had been trucked from a factory in Emporium, Pa., to the Sylvania warehouse in New York City. The incident occurred while the driver was waiting for a loading plat-

form to become free. The driver was dumped into an abandoned Long Island railroad shack four hours later, bound and gagged, but managed to untie himself and call police. This being kidnapping, the FBI in turn were called. The empty truck turned up in Brooklyn a few days later, stripped of clues, and as yet no trace has been found of the tubes or test equipment in the truck. Distributors and dealers in the entire eastern area have been alerted, so somebody is stuck with a pretty hot half-million in bulky loot that can't be kept hidden for long from the insurance inspectors, local police and G-men.

At first thought, it might seem impossible to have a truckload worth so much. Yet, consider that you can get a thousand miniature tubes into the space of a picture-tube carton, then look at one of the big new trailer-trucks, and you then begin to wonder if maybe that truck might have been half-empty.

FOR THE BIRDS. While in search of food, hungry birds are often attracted by the bright metal brackets that support insulators on television towers and high-tension lines. As long as the bird stays on the crossarm bracket or on the energized part while picking out insects from between the crevices of the insulators and brackets, he continues to breathe. When he reaches across the insulator to grab a bug on the other side of the line, however, fireworks break loose. This makes trouble for station operators and power line men, to say nothing of the bird's own feelings.

In the search for something to discourage the birds, color experts were called in. They announced that brown has little attraction for birds. Brown Formica strips formed to fit around the metal brackets were tried, and proved to be the answer. They insulate the brackets, cover the crevices and preserve our birds.

OBIT. The gift of its experimental stratovision equipment by Westinghouse to Texas A & M College

marks the demise of a noble experiment by Westinghouse engineer C. E. Nobles. Technically feasible and satisfactory, but politically unwise, is the final story. Vast coverage was obtained by putting the television transmitter in a plane flying in a small circle four to five miles up, but this coverage contributed to its downfall.

Because of interference between adjacent stratovision planes, the FCC conclusion was that more channels would be needed than could be allocated. Stratovision, they said, would deprive too many cities of their own local television stations. All results of the tests were turned over to the Defense Department of Westinghouse.

PROGRESS. The week ending October 31, 1952, marked another milestone in TV history. More television sets were made that week than radio sets, though admittedly the difference was slight--only 26 more TV sets.

Not too far off in the future is another milestone--the day when dollar sales volume of picture tubes will exceed that of all other receiving tubes put together. Projected sales figures by one large tube manufacturer indicate that this historical date will occur some time in 1955. Contrast this with the tube business of even five years ago and you get a pretty dramatic picture of how television has affected the tube business and, in turn, servicing.

DICTIONARY. One station-break commercial on television is called a spot, just as in radio. Two commercials together are known as twin availabilities. If there are three, the third is called a proximity. A fourth snuggled in at the end of a network show is a hitchhiker. A fifth, at the start of the next show, is a cowcatcher. Unlucky indeed is the viewer who gets five in a row.

◆ ◆ Please turn to page 94 ◆ ◆

SPRAGUE

A
LOOK
INSIDE
PROVES

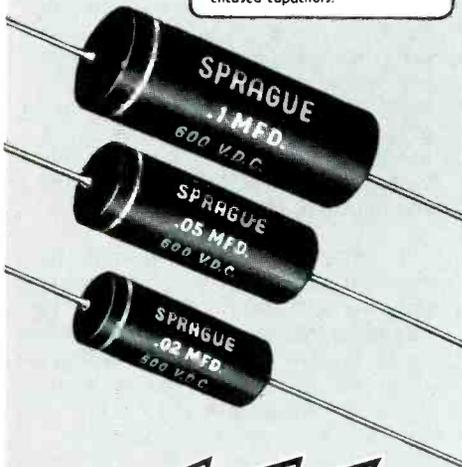
WHY

Sprague *dry* molding keeps the high purity paper and foil windings uncontaminated during manufacture.

Enlarged cut-away view of Sprague Telecap.

This exclusive hollow eyelet terminal permits OIL impregnation *after* the capacitor is molded.

Solder-seal construction formerly used only in costly, large metal-encased capacitors.



SERVICEMAN'S DIARY... by Ben Grim



WHY PAY A SERVICEMAN 5 BUCKS FOR A SIMPLE ADJUSTMENT I CAN MAKE MYSELF? WHILE I'M AT IT, I THINK I'LL JUST TIGHTEN THESE LOOSE SCREWS INSIDE!

THE TROUBLE! A LOOSE ANTENNA WIRE

FIX YOUR OWN TV SET

AFTER HE TACKLED THE CAR, LAST YEAR, WE HAD THE ONLY CAR IN TOWN WITH 3 REVERSE GEARS AND 1 FORWARD!

WE'RE STILL SENDING CLOTHES TO THE LAUNDRY SINCE HE FIXED THE WASHING MACHINE LAST MONTH!

THAT'LL BE \$20.00 FOR A COMPLETE ALIGNMENT JOB. SOMEONE CHANGED ALL THE ADJUSTMENTS ON THE R-F AND I-F TRANSFORMERS!

THANKS TO STAN GUDAS WHITING, IND.

BLACK BEAUTY TELECAPS® ARE TOPS!

★ Molded *dry* into their tough non-flammable Bakelite phenolic cases, Sprague Black Beauty Telecaps are mineral-oil* impregnated through a tiny metal eyelet under high vacuum *after* molding—the same as expensive metal-encased oil-filled jobs! No dust or moisture can contaminate the capacitor sections. This exclusive Sprague *dry assembly process* assures maximum insulation resistance, superior capacitance stability and capacitance retrace†, plus l-o-n-g life under high heat (185°F) and humidity.

★ More than 250 million Black Beauties are on the job today! Used in the most critical TV and radio circuits, they have an unprecedented failure-free service record.

★ Ask for these Black Beauty Capacitors by name and accept no substitute. *There is no other capacitor "just as good."*

★ Do you have the new Sprague TV Replacement Capacitor Manual? If not, write today to: Sprague Products Company, 00 Marshall Street, North Adams, Massachusetts.

*All units from 600 to 12,500 volts are mineral-oil impregnated.

†Only Sprague Black Beauties consistently return to the same capacitance at the same temperature time after time.

WORLD'S LARGEST CAPACITOR MANUFACTURER

SPRAGUE PRODUCTS COMPANY IS THE DISTRIBUTORS' DIVISION OF SPRAGUE ELECTRIC COMPANY

INDEX to PHOTOFAC

RADIO AND TELEVISION SERVICE DATA FOLDERS

No. 37

Covering Folder Sets Nos. 1 thru 200

HOW TO USE THIS INDEX

To find the PHOTOFAC Folder you need, first look for the name of the receiver (listed alphabetically below), and then find the required model number. Opposite the model, you will find the number of the PHOTOFAC Set in which the required Folder appears, and the number of that Folder. The PHOTOFAC Set number is shown in bold-face type; the Folder number is in the regular light-face type.

IMPORTANT—1. The letter "A" following a Set number in the Index listing, indicates a "Preliminary Data Folder." These Folders are designed to provide you *immediately* with preliminary basic data on TV receivers pending their complete coverage in the standard, uniform PHOTOFAC Folder Set presentation.

2. Models marked by an asterisk (*) have not yet been covered in a standard Folder. However, regular PHOTOFAC Subscribers may obtain Schematic, Alignment Data or other required information on these models without charge by supplying make, model or chassis number and serial number. (When requesting such data, mention the name of the Parts Distributor who supplies you with your PHOTOFAC Folder Sets.)

3. Production Change Bulletins contain data supplementary to certain models covered in previously issued PHOTOFAC Folders, and are listed in this Index immediately following the listing of the original coverage of the model or chassis. These Bulletins should be filed with the Folders covering the models to which the changes apply.

Set Folder No. No.	Set Folder No. No.	Set Folder No. No.	Set Folder No. No.	Set Folder No. No.
ADAPTOL	ADMIRAL—Cont.	ADMIRAL—Cont.	ADMIRAL—Cont.	ADMIRAL—Cont.
CT-1 48—1	Chassis 20V1 Tel. Rec. [See Ch. 20T1] (Also see Prod. Chge. Bul. 15—Set 126-1) and Bul. 26—Set 146-1) 117	Chassis 24D1, 24E1, 24F1, 24G1, 24H1, Tel. Rec. (Also see Prod. Chge. Bul. 9—Set 114-1) 103—2	Models 4W18, 4W19 (See Ch. 4T1) 143	Models 6S11, 6S12 (See Ch. 6S1) 107
ADMIRAL (Also see Record Changer Listing)	Chassis 20X1, 20Y1, 20Z1 Tel. Rec. (Also see Prod. Chge. Bul. 7—Set 110-1) (Also see Prod. Chge. Bul. 15—Set 126-1) 117	Chassis 30A1 Tel. Rec. 57—2	Models 5A32/12, 5A32/15, 5A32/16, 5A33/12, 5A33/15, 5A33/16 (See Ch. 5A3) 191	Model 6T01, 6T02, 6T04 1—19
Chassis UL5K1 (See Chassis 5K1) 30	Chassis 21A1 Tel. Rec. (See Ch. 20A1) (Also see Prod. Chge. Bul. 23, Set 140-1) 77	Chassis 30B1, 30C1, 30D1 Tel. Rec. 71—2	Models 5E21, 5E22, 5E23 (See Ch. 5E2) 139	Model 6T05 (See Ch. 6A1) 1
Chassis UL7C1 (See Chassis 7C1) 25	Chassis 21B1, 21C1, 21D1, 21E1 Tel. Rec. (Also see Prod. Chge. Bul. 25, Set 144-1) 118—2	Model 4D11, 4D12, 4D13 (See Ch. 4D1) 49	Models 5F11, 5F12 (See Ch. 5F1) 57	Model 6T06, 6T07 (See Ch. 4A1) 3
Chassis 3A1 (See Ch. 20T1) (Also see Prod. Chge. Bul. 15—Set 126-1) 117	Chassis 21F1, 21G1, Tel. Rec. (Also see Prod. Chge. Bul. 30—Set 156-2 and Prod. Chge. Bul. 46—Set 180-1) 135—2	Models 4H15, 4H16, 4H17 (A or B) Tel. Rec. (See Ch. 20A1) 77	Models 5G21, 5G21/15, 5G22, 5G22/15, 5G23, 5G23/15 (See Ch. 5G2) 137	Model 6T11 (See Model 6T02) 1
Chassis 4A1 3—31	Chassis 21H1, 21J1 Tel. Rec. (See Ch. 21B1) (Also see Prod. Chge. Bul. 25, Set 144-1) 118	Models 4H18, 4H19 (C or CN) Tel. Rec. (See Ch. 20A1) 77	Models 5J21, 5J22, 5J23 (See Ch. 5J2) 136	Model 6T12 (See Ch. 4A1) 3
Chassis 4B1 24—1	Chassis 21K1, 21L1 Tel. Rec. (See Ch. 21F1) (Also see Prod. Chge. Bul. 46—Set 180-1) 135	Models 4H19, 4H20, 4H21, 4H22, 4H23, 4H24, 4H25, 4H26, 4H27, 4H28, 4H29, 4H30, 4H31, 4H32, 4H33, 4H34, 4H35, 4H36, 4H37, 4H38, 4H39, 4H40, 4H41, 4H42, 4H43, 4H44, 4H45, 4H46, 4H47, 4H48, 4H49, 4H50, 4H51, 4H52, 4H53, 4H54, 4H55, 4H56, 4H57, 4H58, 4H59, 4H60, 4H61, 4H62, 4H63, 4H64, 4H65, 4H66, 4H67, 4H68, 4H69, 4H70, 4H71, 4H72, 4H73, 4H74, 4H75, 4H76, 4H77, 4H78, 4H79, 4H80, 4H81, 4H82, 4H83, 4H84, 4H85, 4H86, 4H87, 4H88, 4H89, 4H90, 4H91, 4H92, 4H93, 4H94, 4H95, 4H96, 4H97, 4H98, 4H99, 4H100, 4H101, 4H102, 4H103, 4H104, 4H105, 4H106, 4H107, 4H108, 4H109, 4H110, 4H111, 4H112, 4H113, 4H114, 4H115, 4H116, 4H117, 4H118, 4H119, 4H120, 4H121, 4H122, 4H123, 4H124, 4H125, 4H126, 4H127, 4H128, 4H129, 4H130, 4H131, 4H132, 4H133, 4H134, 4H135, 4H136, 4H137, 4H138, 4H139, 4H140, 4H141, 4H142, 4H143, 4H144, 4H145, 4H146, 4H147, 4H148, 4H149, 4H150, 4H151, 4H152, 4H153, 4H154, 4H155, 4H156, 4H157, 4H158, 4H159, 4H160, 4H161, 4H162, 4H163, 4H164, 4H165, 4H166, 4H167, 4H168, 4H169, 4H170, 4H171, 4H172, 4H173, 4H174, 4H175, 4H176, 4H177, 4H178, 4H179, 4H180, 4H181, 4H182, 4H183, 4H184, 4H185, 4H186, 4H187, 4H188, 4H189, 4H190, 4H191, 4H192, 4H193, 4H194, 4H195, 4H196, 4H197, 4H198, 4H199, 4H200, 4H201, 4H202, 4H203, 4H204, 4H205, 4H206, 4H207, 4H208, 4H209, 4H210, 4H211, 4H212, 4H213, 4H214, 4H215, 4H216, 4H217, 4H218, 4H219, 4H220, 4H221, 4H222, 4H223, 4H224, 4H225, 4H226, 4H227, 4H228, 4H229, 4H230, 4H231, 4H232, 4H233, 4H234, 4H235, 4H236, 4H237, 4H238, 4H239, 4H240, 4H241, 4H242, 4H243, 4H244, 4H245, 4H246, 4H247, 4H248, 4H249, 4H250, 4H251, 4H252, 4H253, 4H254, 4H255, 4H256, 4H257, 4H258, 4H259, 4H260, 4H261, 4H262, 4H263, 4H264, 4H265, 4H266, 4H267, 4H268, 4H269, 4H270, 4H271, 4H272, 4H273, 4H274, 4H275, 4H276, 4H277, 4H278, 4H279, 4H280, 4H281, 4H282, 4H283, 4H284, 4H285, 4H286, 4H287, 4H288, 4H289, 4H290, 4H291, 4H292, 4H293, 4H294, 4H295, 4H296, 4H297, 4H298, 4H299, 4H300, 4H301, 4H302, 4H303, 4H304, 4H305, 4H306, 4H307, 4H308, 4H309, 4H310, 4H311, 4H312, 4H313, 4H314, 4H315, 4H316, 4H317, 4H318, 4H319, 4H320, 4H321, 4H322, 4H323, 4H324, 4H325, 4H326, 4H327, 4H328, 4H329, 4H330, 4H331, 4H332, 4H333, 4H334, 4H335, 4H336, 4H337, 4H338, 4H339, 4H340, 4H341, 4H342, 4H343, 4H344, 4H345, 4H346, 4H347, 4H348, 4H349, 4H350, 4H351, 4H352, 4H353, 4H354, 4H355, 4H356, 4H357, 4H358, 4H359, 4H360, 4H361, 4H362, 4H363, 4H364, 4H365, 4H366, 4H367, 4H368, 4H369, 4H370, 4H371, 4H372, 4H373, 4H374, 4H375, 4H376, 4H377, 4H378, 4H379, 4H380, 4H381, 4H382, 4H383, 4H384, 4H385, 4H386, 4H387, 4H388, 4H389, 4H390, 4H391, 4H392, 4H393, 4H394, 4H395, 4H396, 4H397, 4H398, 4H399, 4H400, 4H401, 4H402, 4H403, 4H404, 4H405, 4H406, 4H407, 4H408, 4H409, 4H410, 4H411, 4H412, 4H413, 4H414, 4H415, 4H416, 4H417, 4H418, 4H419, 4H420, 4H421, 4H422, 4H423, 4H424, 4H425, 4H426, 4H427, 4H428, 4H429, 4H430, 4H431, 4H432, 4H433, 4H434, 4H435, 4H436, 4H437, 4H438, 4H439, 4H440, 4H441, 4H442, 4H443, 4H444, 4H445, 4H446, 4H447, 4H448, 4H449, 4H450, 4H451, 4H452, 4H453, 4H454, 4H455, 4H456, 4H457, 4H458, 4H459, 4H460, 4H461, 4H462, 4H463, 4H464, 4H465, 4H466, 4H467, 4H468, 4H469, 4H470, 4H471, 4H472, 4H473, 4H474, 4H475, 4H476, 4H477, 4H478, 4H479, 4H480, 4H481, 4H482, 4H483, 4H484, 4H485, 4H486, 4H487, 4H488, 4H489, 4H490, 4H491, 4H492, 4H493, 4H494, 4H495, 4H496, 4H497, 4H498, 4H499, 4H500, 4H501, 4H502, 4H503, 4H504, 4H505, 4H506, 4H507, 4H508, 4H509, 4H510, 4H511, 4H512, 4H513, 4H514, 4H515, 4H516, 4H517, 4H518, 4H519, 4H520, 4H521, 4H522, 4H523, 4H524, 4H525, 4H526, 4H527, 4H528, 4H529, 4H530, 4H531, 4H532, 4H533, 4H534, 4H535, 4H536, 4H537, 4H538, 4H539, 4H540, 4H541, 4H542, 4H543, 4H544, 4H545, 4H546, 4H547, 4H548, 4H549, 4H550, 4H551, 4H552, 4H553, 4H554, 4H555, 4H556, 4H557, 4H558, 4H559, 4H560, 4H561, 4H562, 4H563, 4H564, 4H565, 4H566, 4H567, 4H568, 4H569, 4H570, 4H571, 4H572, 4H573, 4H574, 4H575, 4H576, 4H577, 4H578, 4H579, 4H580, 4H581, 4H582, 4H583, 4H584, 4H585, 4H586, 4H587, 4H588, 4H589, 4H590, 4H591, 4H592, 4H593, 4H594, 4H595, 4H596, 4H597, 4H598, 4H599, 4H600, 4H601, 4H602, 4H603, 4H604, 4H605, 4H606, 4H607, 4H608, 4H609, 4H610, 4H611, 4H612, 4H613, 4H614, 4H615, 4H616, 4H617, 4H618, 4H619, 4H620, 4H621, 4H622, 4H623, 4H624, 4H625, 4H626, 4H627, 4H628, 4H629, 4H630, 4H631, 4H632, 4H633, 4H634, 4H635, 4H636, 4H637, 4H638, 4H639, 4H640, 4H641, 4H642, 4H643, 4H644, 4H645, 4H646, 4H647, 4H648, 4H649, 4H650, 4H651, 4H652, 4H653, 4H654, 4H655, 4H656, 4H657, 4H658, 4H659, 4H660, 4H661, 4H662, 4H663, 4H664, 4H665, 4H666, 4H667, 4H668, 4H669, 4H670, 4H671, 4H672, 4H673, 4H674, 4H675, 4H676, 4H677, 4H678, 4H679, 4H680, 4H681, 4H682, 4H683, 4H684, 4H685, 4H686, 4H687, 4H688, 4H689, 4H690, 4H691, 4H692, 4H693, 4H694, 4H695, 4H696, 4H697, 4H698, 4H699, 4H700, 4H701, 4H702, 4H703, 4H704, 4H705, 4H706, 4H707, 4H708, 4H709, 4H710, 4H711, 4H712, 4H713, 4H714, 4H715, 4H716, 4H717, 4H718, 4H719, 4H720, 4H721, 4H722, 4H723, 4H724, 4H725, 4H726, 4H727, 4H728, 4H729, 4H730, 4H731, 4H732, 4H733, 4H734, 4H735, 4H736, 4H737, 4H738, 4H739, 4H740, 4H741, 4H742, 4H743, 4H744, 4H745, 4H746, 4H747, 4H748, 4H749, 4H750, 4H751, 4H752, 4H753, 4H754, 4H755, 4H756, 4H757, 4H758, 4H759, 4H760, 4H761, 4H762, 4H763, 4H764, 4H765, 4H766, 4H767, 4H768, 4H769, 4H770, 4H771, 4H772, 4H773, 4H774, 4H775, 4H776, 4H777, 4H778, 4H779, 4H780, 4H781, 4H782, 4H783, 4H784, 4H785, 4H786, 4H787, 4H788, 4H789, 4H790, 4H791, 4H792, 4H793, 4H794, 4H795, 4H796, 4H797, 4H798, 4H799, 4H800, 4H801, 4H802, 4H803, 4H804, 4H805, 4H806, 4H807, 4H808, 4H809, 4H810, 4H811, 4H812, 4H813, 4H814, 4H815, 4H816, 4H817, 4H818, 4H819, 4H820, 4H821, 4H822, 4H823, 4H824, 4H825, 4H826, 4H827, 4H828, 4H829, 4H830, 4H831, 4H832, 4H833, 4H834, 4H835, 4H836, 4H837, 4H838, 4H839, 4H840, 4H841, 4H842, 4H843, 4H844, 4H845, 4H846, 4H847, 4H848, 4H849, 4H850, 4H851, 4H852, 4H853, 4H854, 4H855, 4H856, 4H857, 4H858, 4H859, 4H860, 4H861, 4H862, 4H863, 4H864, 4H865, 4H866, 4H867, 4H868, 4H869, 4H870, 4H871, 4H872, 4H873, 4H874, 4H875, 4H876, 4H877, 4H878, 4H879, 4H880, 4H881, 4H882, 4H883, 4H884, 4H885, 4H886, 4H887, 4H888, 4H889, 4H890, 4H891, 4H892, 4H893, 4H894, 4H895, 4H896, 4H897, 4H898, 4H899, 4H900, 4H901, 4H902, 4H903, 4H904, 4H905, 4H906, 4H907, 4H908, 4H909, 4H910, 4H911, 4H912, 4H913, 4H914, 4H915, 4H916, 4H917, 4H918, 4H919, 4H920, 4H921, 4H922, 4H923, 4H924, 4H925, 4H926, 4H927, 4H928, 4H929, 4H930, 4H931, 4H932, 4H933, 4H934, 4H935, 4H936, 4H937, 4H938, 4H939, 4H940, 4H941, 4H942, 4H943, 4H944, 4H945, 4H946, 4H947, 4H948, 4H949, 4H950, 4H951, 4H952, 4H953, 4H954, 4H955, 4H956, 4H957, 4H958, 4H959, 4H960, 4H961, 4H962, 4H963, 4H964, 4H965, 4H966, 4H967, 4H968, 4H969, 4H970, 4H971, 4H972, 4H973, 4H974, 4H975, 4H976, 4H977, 4H978, 4H979, 4H980, 4H981, 4H982, 4H983, 4H984, 4H985, 4H986, 4H987, 4H988, 4H989, 4H990, 4H991, 4H992, 4H993, 4H994, 4H995, 4H996, 4H997, 4H998, 4H999, 4H1000, 4H1001, 4H1002, 4H1003, 4H1004, 4H1005, 4H1006, 4H1007, 4H1008, 4H1009, 4H1010, 4H1011, 4H1012, 4H1013, 4H1014, 4H1015, 4H1016, 4H1017, 4H1018, 4H1019, 4H1020, 4H1021, 4H1022, 4H1023, 4H1024, 4H1025, 4H1026, 4H1027, 4H1028, 4H1029, 4H1030, 4H1031, 4H1032, 4H1033, 4H1034, 4H1035, 4H1036, 4H1037, 4H1038, 4H1039, 4H1040, 4H1041, 4H1042, 4H1043, 4H1044, 4H1045, 4H1046, 4H1047, 4H1048, 4H1049, 4H1050, 4H1051, 4H1052, 4H1053, 4H1054, 4H1055, 4H1056, 4H1057, 4H1058, 4H1059, 4H1060, 4H1061, 4H1062, 4H1063, 4H1064, 4H1065, 4H1066, 4H1067, 4H1068, 4H1069, 4H1070, 4H1071, 4H1072, 4H1073, 4H1074, 4H1075, 4H1076, 4H1077, 4H1078, 4H1079, 4H1080, 4H1081, 4H1082, 4H1083, 4H1084, 4H1085, 4H1086, 4H1087, 4H1088, 4H1089, 4H1090, 4H1091, 4H1092, 4H1093, 4H1094, 4H1095, 4H1096, 4H1097, 4H1098, 4H1099, 4H1100, 4H1101, 4H1102, 4H1103, 4H1104, 4H1105, 4H1106, 4H1107, 4H1108, 4H1109, 4H1110, 4H1111, 4H1112, 4H1113, 4H1114, 4H1115, 4H1116, 4H1117, 4H1118, 4H1119, 4H1120, 4H1121, 4H1122, 4H1123, 4H1124, 4H1125, 4H1126, 4H1127, 4H1128, 4H1129, 4H1130, 4H1131, 4H1132, 4H1133, 4H1134, 4H1135, 4H1136, 4H1137, 4H1138, 4H1139, 4H1140, 4H1141, 4H1142, 4H1143, 4H1144, 4H1145, 4H1146, 4H1147, 4H1148, 4H1149, 4H1150, 4H1151, 4H1152, 4H1153, 4H1154, 4H1155, 4H1156, 4H1157, 4H1158, 4H1159, 4H1160, 4H1161, 4H1162, 4H1163, 4H1164, 4H1165, 4H1166, 4H1167, 4H1168, 4H1169, 4H1170, 4H1171, 4H1172, 4H1173, 4H1174, 4H1175, 4H1176, 4H1177, 4H1178, 4H1179, 4H1180, 4H1181, 4H1182, 4H1183, 4H1184, 4H1185, 4H1186, 4H1187, 4H1188, 4H1189, 4H1190, 4H1191, 4H1192, 4H1193, 4H1194, 4H1195, 4H1196, 4H1197, 4H1198, 4H1199, 4H1200, 4H1201, 4H1202, 4H1203, 4H1204, 4H1205, 4H1206, 4H1207, 4H1208, 4H1209, 4H1210, 4H1211, 4H1212, 4H1213, 4H1214, 4H1215, 4H1216, 4H1217, 4H1218, 4H1219, 4H1220, 4H1221, 4H1222, 4H1223, 4H1224, 4H1225, 4H1226, 4H1227, 4H1228, 4H1229, 4H1230, 4H1231, 4H1232, 4H1233, 4H1234, 4H1235, 4H1236, 4H1237, 4H1238, 4H1239, 4H1240, 4H1241, 4H1242, 4H1243, 4H1244, 4H1245, 4H1246, 4H1247, 4H1248, 4H1249, 4H1250, 4H1251, 4H1252, 4H1253, 4H1254, 4H1255, 4H1256, 4H1257, 4H1258, 4H1259, 4H1260, 4H1261, 4H1262, 4H1263, 4H1264, 4H1265, 4H1266, 4H1267, 4H1268, 4H1269, 4H1270, 4H1271, 4H1272, 4H1273, 4H1274, 4H1275, 4H1276, 4H1277, 4H1278, 4H1279, 4H1280, 4H1281, 4H1282, 4H1283, 4H1284, 4H1285, 4H1286, 4H1287, 4H1288, 4H1289, 4H1290, 4H1291, 4H1292, 4H1293, 4H1294, 4H1295, 4H1296, 4H1297, 4H1298, 4H1299, 4H1300, 4H1301, 4H1302, 4H1303, 4H1304, 4H1305, 4H1306, 4H1307, 4H1308, 4H1309, 4H1310, 4H1311, 4H1312, 4H1313, 4H1314, 4H1315, 4H1316, 4H1317, 4H1318, 4H1319, 4H1320, 4H1321, 4H1322, 4H1323, 4H1324, 4H1325, 4H1326, 4H1327, 4H1328, 4H1329, 4H1330, 4H1331, 4H1332, 4H1333, 4H1334, 4H1335, 4H1336, 4H1337, 4H1338, 4H1339, 4H1340, 4H1341, 4H1342, 4H1343, 4H1344, 4H1345, 4H1346, 4H1347, 4H1348, 4H1349, 4H1350, 4H1351, 4H1352, 4H1353, 4H1354, 4H1355, 4H1356, 4H1357, 4H1358, 4H1359, 4H1360, 4H1361, 4H1362, 4H1363, 4H1364, 4H1365, 4H1366, 4H1367, 4H1368, 4H1369, 4H1370, 4H1371, 4H1372, 4H1373, 4H1374, 4H1375, 4H1376, 4H1377, 4H1378, 4H1379, 4H1380, 4H1381, 4H1382, 4H1383, 4H1384, 4H1385, 4H1386, 4H1387, 4H1388, 4H1389, 4H1390, 4H1391, 4H1392, 4H1393, 4H1394, 4H1395, 4H1396, 4H1397, 4H1398, 4H1399, 4H1400, 4H1401, 4H1402, 4H1403, 4H1404, 4H1405, 4H1406, 4H1407, 4H1408, 4H1409, 4H1410, 4H1411, 4H1412, 4H1413, 4H1414, 4H1415, 4H1416, 4H1417, 4H1418, 4H1419, 4		

ADMIRAL—AIRLINE

ADMIRAL—Cont.

Models 20X11, 20X12 Tel. Rec. (See Ch. 20X1).....100
 Model 20X122 Tel. Rec. (See Ch. 20X1).....100
 Model 20X136 Tel. Rec. (See Ch. 20X1).....100
 Models 20X145, 20X146, 20X147 Tel. Rec. (See Ch. 20X1).....100
 Model 22X12 Tel. Rec. (See Ch. 20X1).....100
 Models 22X25, 22X26, 22X27 Tel. Rec. (See Ch. 20X1).....100
 Models 24A11, 24A12 Tel. Rec. (See Ch. 20A1).....77
 Model 24A125 Tel. Rec. (See Ch. 20A1).....77
 Model 24A125AN Tel. Rec. (See Ch. 20X1).....100
 Models 24A126, 24A127 (See Ch. 20A1).....77
 Models 24C15, 24C16, 24C17 Tel. Rec. (See Ch. 20A1).....77
 Models 24R11, 24R12 Tel. Rec. (See Ch. 20R1).....117
 Models 24X15, 24X15S, 24X16, 24X16S, 24X17S Tel. Rec. (See Ch. 20X1 and 4L1).....100
 Models 25A15, 25A16, 25A17 Tel. Rec. (See Ch. 20A1).....77
 Models 26R11, 26R12 Tel. Rec. (See Ch. 21B1).....118
 Models 26R25, 26R26 Tel. Rec. (See Ch. 24D1).....103
 Model 26R25A, 26R26A Tel. Rec. (See Ch. 21B1).....118
 Models 26R35, 26R36, 26R37 Tel. Rec. (See Ch. 24D1).....103
 Models 26R35A, 26R36A, 26R37A Tel. Rec. (See Ch. 21B1).....118
 Models 26X35, 26X36, 26X37 Tel. Rec. (See Ch. 24D1).....103
 Model 26X36 AS, S (Ch. 21E1 and Radio Ch. 5D2) (See Chassis 21B1).....118
 Model 26X37 Tel. Rec. (See Chassis 24D1).....103
 Models 26X45, 26X46 Tel. Rec. (See Ch. 24D1).....103
 Models 26X55, 26X56, 26X57 Tel. Rec. (See Ch. 24D1).....103
 Models 26X55A, 26X56A, 26X57A Tel. Rec. (See Ch. 21B1).....118
 Models 26X65, 26X66, 26X67 Tel. Rec. (See Ch. 24D1).....103
 Models 26X65A, 26X66A, 26X67A Tel. Rec. (See Ch. 21B1).....118
 Models 26X75, 26X76 Tel. Rec. (See Ch. 24D1).....103
 Models 26X75A, 26X76A Tel. Rec. (See Ch. 21B1).....118
 Models 27K11 Tel. Rec. (See Ch. 21F1).....135
 Models 27K15, A, B, 27K16, A, B, 27K17, A, B Tel. Rec. (See Ch. 21F1).....135
 Models 27K25, A, B, 27K26, A, B, 27K27, A, B Tel. Rec. (See Ch. 21F1).....135
 Models 27K35, A, B, 27K36, A, B Tel. Rec. (See Ch. 21F1).....135
 Models 27K46, A, B Tel. Rec. (See Ch. 21F1).....135
 Models 27K85, 27K86, 27K87 Tel. Rec. (See Ch. 21F1) (Also See Prod. Chge. Bul. 30, Set 156-2).....135
 Model 27M12 Tel. Rec. (See Ch. 21F1).....135
 Models 27M25, 27M26, 27M27, (Ch. 21F1, 21P1) Tel. Rec. (See Ch. 21F1) (Also See Prod. Chge. Bul. 30-Set 156-2).....135
 Models 29X15, 29X16, 29X17 Tel. Rec. (See Ch. 24D1).....103
 Models 29X25, 29X26, 29X27 Tel. Rec. (See Ch. 24D1).....103
 Model 29X25A Tel. Rec. (See Ch. 21B1).....118
 Model 29X26A Tel. Rec. (See Ch. 21B1).....118
 Models 30A12, 30A13 (S or SN) Tel. Rec. (See Ch. 20A1).....57
 Models 30A14, 30A15, 30A16, Tel. Rec. (See Ch. 30A1).....57
 Models 30B15, 30B16, 30B17 (S or SN) Tel. Rec. (See Ch. 30B1) 71
 Models 30C15, 30C16, 30C17 (S or SN) Tel. Rec. (See Ch. 30B1) 71
 Models 30F15, A, 30F16, A, 30F17, A Tel. Rec. (See Ch. 20A1).....77
 Models 32X15, 32X16 Tel. Rec. (See Ch. 20X1 and 4S1).....100

ADMIRAL—Cont.

Models 32X26, 32X27 Tel. Rec. (See Ch. 20X1 and 5B2).....100
 Models 32X36, 32X36 Tel. Rec. (See Ch. 20X1 and 5B2).....100
 Models 34R15, A, 34R16, A Tel. Rec. (See Ch. 20T1).....117
 Model 36R37 Tel. Rec. (See Ch. 21B1).....118
 Models 36R45, 36R46 Tel. Rec. (See Ch. 21B1).....118
 Models 36X35, 36X36, 36X37 Tel. Rec. (See Ch. 24D1 (Set 103) and Radio Ch. 5B2 (Set 100)).....100
 Models 36X35A, 36X36A, 36X37A Tel. Rec. (See Ch. 24D1 (Set 103) and Radio Ch. 5D2 (Set 118)).....100
 Model 37F15, A, B Tel. Rec. (See Ch. 21F1 Set 135 and Ch. 5D2 Set 118).....100
 Models 37F27, A, B, 37F28, A, B Tel. Rec. (See Ch. 21F1 Set 135 and Ch. 5D2 Set 118).....100
 Models 37F35, A, B, 37F36, A, B Tel. Rec. (See Ch. 21F1 Set 135 and Ch. 5D2 Set 118).....100
 Models 37F55, 37F56, 37F67 (Ch. 21G1, 21Q1, and Radio Ch. 5D2) Tel. Rec. (For TV Chassis 21G1 see Ch. 21F1; for TV Chassis 21Q1 see Ch. 21P1; for Radio Ch. 5D2 see Ch. 21B1).....118
 Models 37K15, A, B, 37K16, A, B Tel. Rec. (See Ch. 21F1 Set 135 and Ch. 3C1 Set 117).....100
 Models 37K27, A, B, 37K28, A, B Tel. Rec. (See Ch. 21F1 Set 135 and Ch. 3C1 Set 117).....100
 Models 37K35, A, B, 37K36, A, B Tel. Rec. (See Ch. 21F1 Set 135 and Ch. 3C1 Set 117).....100
 Models 37K55, 37K56, 37K57 (Ch. 21G1, 21Q1, and Radio Ch. 5D2) Tel. Rec. (For TV Ch. 21G1, See 21F1; for TV Ch. 21Q1 See Ch. 21P1; for Radio See Ch. 3C1).....118
 Models 37M15, 37M16 (Ch. 21G1, 21Q1 and Radio Ch. 3C1) Tel. Rec. (For TV, Ch. 21G1 See Ch. 21F1; for TV, Ch. 21Q1 See Ch. 21P1; for Radio See Ch. 3C1).....118
 Models 37M25, 37M26, 37M27 (See Ch. 21W1).....177
 Models 39X16A, 39X17A Tel. Rec. (See Ch. 24D1 (Set 103) and Radio Ch. 5B2 (Set 100)).....100
 Models 39X16B, 39X17B Tel. Rec. (See Ch. 24D1 (Set 103) and Radio Ch. 5D2 (Set 118)).....100
 Model 39X17C Tel. Rec. (See Ch. 21B1).....118
 Models 39X25, 39X26 Tel. Rec. (See Ch. 24D1 (Set 103) and Radio Ch. 5D2 (Set 118)).....100
 Models 39X25A, 39X26A Tel. Rec. (See Ch. 21B1).....118
 Models 39X35, 39X36, 39X37 Tel. Rec. (See Ch. 21B1).....118
 Models 47M15, 47M15A, 47M16, 47M17 Tel. Rec. (See Ch. 21W1).....177
 Models 47M35, 47M36, 47M37 Tel. Rec. (See Ch. 21W1).....177
 Models 52M16, 52M17 Tel. Rec. (See Ch. 21W1).....177
 Models 57M10, 57M11, 57M12 Tel. Rec. (See Ch. 21W1).....177
 Model 121DX10 (Ch. 19C1) Tel. Rec. (See Ch. 19A1).....180
 Models 121DX12, 121DX16 (Ch. 19C1) Tel. Rec. (See Ch. 12K15, 12K16, 12K17 Tel. Rec. (See Ch. 21F1) (Also See Prod. Chge. Bul. 30, Set 156-2).....135
 Models 12K15A, 12K16A, 12K17A Tel. Rec. (See Ch. 22A2).....180
 Models 12M10, 12M11A, 12M12A Tel. Rec. (See Ch. 22A2).....180
 Models 12M11, 12M12 (Ch. 21M1) Tel. Rec. (See Ch. 21F1) (Also See Prod. Chge. Bul. 30-Set 156-2).....135
 Models 221DX15, 221DX16, 221DX17 (Ch. 19C1) Tel. Rec. (See Ch. 221DX26, 221DX38 (Ch. 19C1) Tel. Rec. (See Ch. 221K16, 221K16A (Ch. 21F1).....135
 Models 221K26, 221K28 Tel. Rec. (See Ch. 21F1).....135

ADMIRAL—Cont.

Models 221K35, 221K36 Tel. Rec. (See Ch. 21F1).....135
 Models 221K45, 221K46, 221K47 Tel. Rec. (See Ch. 21F1) (Also See Prod. Chge. Bul. 30, Set 156-2).....135
 Models 221K45A, 221K46A, 221K47A Tel. Rec. (See Ch. 22A2).....180
 Models 221M26, 221M27 (Ch. 21K1) Tel. Rec. (See Ch. 21F1) (Also See Prod. Chge. Bul. 30-Set 156-2).....135
 Model 222DX15 (Ch. 19H1) Tel. Rec. (See Ch. 21F1).....135
 Models 222DX15S, 222DX16, 222DX17 (Ch. 22C2) Tel. Rec. (See Ch. 22C2).....180
 Models 222DX48, 222DX49 (Ch. 22C2) Tel. Rec. (See Ch. 22C2).....180
 Model 320R17 (Ch. 21J1) Tel. Rec. (See Ch. 21B1).....118
 Model 320R25 (Ch. 21J1) Tel. Rec. (See Ch. 21B1).....118
 Model 320R26 (Ch. 21J1) Tel. Rec. (See Ch. 21B1).....118
 Models 321DX15, 321DX16, 321DX17 (Ch. 19E1) Tel. Rec. (See Ch. 21F1).....135
 Model 321DX26 (Ch. 19E1) Tel. Rec. (See Ch. 21F1).....135
 Models 321F15, 321F16, 321F18 Tel. Rec. (See Ch. 21F1 Set 135 and Ch. 5D2 Set 118).....100
 Models 321F27 Tel. Rec. (See Ch. 21F1 Set 135 and Ch. 5D2 Set 118).....100
 Models 321F35, 321F36 Tel. Rec. (See Ch. 21F1 Set 135 and Ch. 5D2 Set 118).....100
 Models 321F49 Tel. Rec. (See Ch. 21F1 Set 135 and Ch. 5D2 Set 118).....100
 Models 321F65, 321F66, 321F67 (Ch. 21M1 and Radio Ch. 5D2) (For TV Chassis see Ch. 21F1 and Prod. Chge. Bul. 30, Set 156-2; for Radio Chassis see Ch. 21B1, Set 118).....118
 Models 321K15, 321K16, 321K18 (See Ch. 21F1 Set 135 and Ch. 3C1 Set 117).....100
 Model 321K27 Tel. Rec. (See Ch. 21F1 Set 135 and Ch. 3C1 Set 117).....100
 Models 321K49 Tel. Rec. (See Ch. 21F1 Set 135 and Ch. 3C1 Set 117).....100
 Models 321K65, 321K66, 321K67 Tel. Rec. (See Ch. 21F1) (Also See Prod. Chge. Bul. 30, Set 156-2).....135
 Models 321M26, 321M27 Tel. Rec. (See Ch. 22A2).....180
 Models 321M25A, 321M26A, 321M27A Tel. Rec. (See Ch. 22A2).....180
 Models 322DX16 (Ch. 22E2) Tel. Rec. (See Ch. 21F1).....135
 Models 421M15, 421M16, (Ch. 21Y1) Tel. Rec. (See Model 321M25).....177
 Models 421M15A, 421M16A, 421M17 Tel. Rec. (See Ch. 22A2).....180
 Models 421M35, 421M36, 421M37, 520M11, 520M12, Tel. Rec. (See Ch. 22A2).....180
 Models 520M15, 520M16, 520M17 Tel. Rec. (See Ch. 22A2).....180
 Models 521M15, 521M16, 521M17 Tel. Rec. (See Ch. 21W1).....177
 Models 521M15A, 521M16A, 521M17A Tel. Rec. (See Ch. 22A2).....180

AERMOBILE

181-AD 12-1

AERO (See Record Changer Listing)

AIMCEE (See AMC)

AIRADIO

SU-41D 11-1
 SU-52A, B, C (Receiver) 13-2
 TRA-1A, B, C (Transmitter) 13-1
 3100 37-1

AIRCASTE

C-300 136-3
 DM-700 85-1
 EV-740 (See Model DM-700) 85
 G-516, G-518 48-3
 G-521 54-3
 G-724 52-25
 G-725 50-1
 K-1 93-1
 P-20 71-3
 P-22 87-1
 PAM-4 101-1
 PC-8, PC-358 99-1
 PM-78 100-2

AIRCASTE—Cont.

PM-358 98-1
 PX 13-35
 REV248 127-2
 RZ248 (See Model REV248) 127
 SC-448 62-2
 TD-6 103-3
 WEU-262 91-1
 WRA-1A 47-1
 WRA-4M 68-1
 XB702, XB703 Tel. Rec. 93A-1
 XL750, XP775 Tel. Rec. 93A-1
 OA-358-VM (See Model 358VM) 127
 06-F, 06-L 135-3
 7B 52-1
 9 50-2
 10C, 10T Tel. Rec. (See Model 14C) 140
 12C, 12T Tel. Rec. (See Model 14C) 140
 14C, 14T Tel. Rec. 140-3
 16C, 16T Tel. Rec. 67-2
 17C, 17T Tel. Rec. (See Model 14C) 140
 20XUT Tel. Rec. 185-3
 79A 137-3
 88, 88W 142-2
 102B 98-2
 106B 13-3
 150, 153 126-2
 171, 172 96-1
 198 83-1
 200 139-3
 201 85-1
 211 68-3
 212 63-1
 2271, 227W 84-1
 312 Tel. Rec. (See Model 14C) 140
 316 Tel. Rec. (See Model 14C) 140
 350 136-4
 358VM 127-3
 412 Tel. Rec. (See Model 14C) 140
 416 Tel. Rec. (See Model 14C) 140
 472, 472P24 (See Model 472, MP25) 168
 472, 472P25 (See Model 472, MP25) 168
 472, 472P26 (See Model 472, MP25) 168-1
 472, 472P27 (See Model 472, MP25) 168-2
 568 14-1
 568, 205-1 (See Model 200) 139
 568, 305 (See Model 568, 205) 141
 572 55-1
 594-935 (See Model 935) 128
 602-1B2144 128-2
 603-PR-8.1 133-2
 604 53-2
 606-400WB 119-2
 607-299 177-3
 607-314, 607-315 122-2
 607-316, -1, 607-317, -1 138-2
 610, C351 174-2
 610, D200 142-3
 610, F100 138-3
 610, F151 172-2
 610, H400 178-2
 610, P-651.1 179-2
 610, S500 184-2
 621 (Ch. FJ-91) 14-2
 626 18-3
 641 17-1
 651 15-2
 652, A25, 652, A35 168-2
 652, 505 168-2
 659, 511, 659, 513 167-2
 659, 520E, I 185-4
 9151, W 129-2
 935 128-2
 951W, 951K, W (See Model 9151) 129
 1400C, 1400T Tel. Rec. (See Model 14C) 140
 1700C, 1700T Tel. Rec. (See Model 14C) 140
 2000C Tel. Rec. (See Model 14C) 140
 3170 Tel. Rec. (See Model 14C Set 140 and Model 150 Set 126) 140
 4170 Tel. Rec. (See Model 14C Set 140 and Model 350 Set 136) 16-2
 5000, 5001 19-1
 5002 19-1
 5003, 5004, 5005, 5006 20-1
 5008, 5009 46-1
 5010, 5011, 5012 (Ch. 110) 13-4
 5015.1 118-3
 5020 16-3
 5022 123-2
 5024 45-1
 5025 24-2
 5027 49-3
 5028 44-1
 5029 51-1
 5035 46-2
 5036 72-2
 5044, 5045 121-2
 5050 48-4
 5052 45-2
 5056-A 120-2
 6042 61-1
 6050 74-1
 6053 97-1
 6514 18-4
 6541 17-2
 6544, 6547 (See Model 6541) 17
 6611, 6612, 6613, 6630, 6631, 6632, 6634, 6635 15-2

AIRCASTE—Cont.

7000, 7001 14-3
 7004 19-2
 7014, 7015 57-3
 7017 Early 47-2
 7553 45-3
 90081, 9008W 99-2
 90091, 9009W 97-2
 90121, 9012W 94-1
 10002 56-1
 10027A1 56-2
 10005 62-3
 10021-1, 10022-1 59-3
 10023 58-1
 10024-1 58-2
 108014, 108504 57-4
 12104 73-1
 121124 Tel. Rec. 61-2
 127084 55-2
 131504 60-2
 132564 69-1
 138104 54-3
 138124 64-1
 142724 58-4
 147114 56-3
 149654, 150084 71-4
 159144 (See Model 139144) 59

AIR CHIEF (See Firestone)

AIR KING

A-400 (Ch. 470) 23-1
 A-403 20-2
 A-410 34-1
 A-410 (Revised) 40-1
 A-426 43-1
 A-501, A-502 (Ch. 465-4) 31-3
 A-510 24-3
 A-511, A-512 30-2
 A-520 49-4
 A-600 26-3
 A-604 81-2
 A-625 50-3
 A-650 45-4
 A-1000, A-1001 Tel. Receiver 58-3
 A1001A Tel. Rec. 75-2
 A1016 Tel. Rec. 91-2
 A2000, A2001, A2002 Tel. Rec. (See Model A1001A) 75
 A2010 Tel. Rec. (See Model A1001A) 75
 A-2012 Tel. Rec. (See Model A1001A) 75
 12C1 Tel. Rec. (See Model 16C1) 121
 12T1, 12T2 Tel. Rec. (See Model 16C1) 121
 14T1 Tel. Rec. (See Model 16C1) 121
 16C1, 16C2, 16C5 Tel. Rec. 121-3
 16M1 Tel. Rec. (See Model 16C1) 121
 16T1 Tel. Rec. (See Model 16C1) 121
 16T1B Tel. Rec. (See Model 16C1) 121
 17C2 (Ch. 700-96) 151-2
 17C5 (Ch. 700-96) 151
 17C5 Tel. Rec. (See Model 17C2) 151
 17C7 (Ch. 700-96) Tel. Rec. (See Model 17C2) 151
 17K1 (Ch. 700-96) 151
 17K1C (Ch. 700, 110, 700, 130) Tel. Rec. 150-2
 17M1 (Ch. 700-96) Tel. Rec. (See Model 17C2) 151
 17T1 (Ch. 700-96) Tel. Rec. (See Model 17C2) 151
 19C1 Tel. Rec. (See Model 16C1) 121
 20C1, 20C2 (Ch. 700-93) Tel. Rec. (See Model 17C2) 151
 20K1 (Ch. 700-95) Tel. Rec. (See Model 17C2) 151
 20M1 (Ch. 700-93) Tel. Rec. (See Model 17C2) 151
 718R Tel. Rec. (See Model 16C1) 121
 800 66-1
 2017R Tel. Rec. 111-2
 4601 (See Model 4609) 1
 4603 3-26
 4604 4-25
 4604D (See Model 4604) 4
 4607, 4608 3-1
 4609, 4610 Early (See Model 4607) 3
 4609, 4610 (Late) 11-2
 4625 13-8
 4700 39-1
 4704 12-2
 4705, 4706 9-1
 4708 (See Model 4704) 12

AIR KNIGHT (SKY KNIGHT)

CA-500 17-4
 CB-500P 17-31
 NS-RD291 17-3

AIRLINE

05BR-3021B Tel. Rec. 150-3
 05BR-3021C Tel. Rec.
 05BR-3024B Tel. Rec. (See Model 05BR-3021B) 150
 05BR-3024C Tel. Rec.
 05BR-3027A Tel. Rec. (See Model 05BR-3021B) 150
 05BR-3027B Tel. Rec.
 05BR-3034A Tel. Rec.
 05BR-3034B Tel. Rec.
 05BR-3044A Tel. Rec.
 05GAA-992A 125-2
 05GCB-1540A 131-2
 05GCB-1541A 131-2
 05GCB-3019A Tel. Rec. 116-2

AIRLINE-Cont.

05GCD-3658A	151-3
05GHH-934A	167-3
05GHH-1061A	133-3
05GSE-3020A, B, C, Tel. Rec. (Also see Prod. Chg. Bul. 36—Set 166-1)	117-3
05GSE-3037A Tel. Rec. (See Model 05GSE-3020A)	117
05GSE-3042A Tel. Rec. (See Model 05GSE-3020A) (Also see Prod. Chg. Bul. 36—Set 166-1)	117
05WG-1811B (See Model 94WG-1811A)	99
05WG-1813A	127-4
05WG-2748C, D, E (See Model 94WG-2748A)	90
05WG-2748F	139-4
05WG-2749D	129-3
05WG-2752	100-3
05WG-3016A, B, Tel. Rec. (See Model 94WG-3006A Set 72 and Set 110 Folder 2)	119-3
05WG-3030C Tel. Rec.	148-2
05WG-3031A Tel. Rec.	109-1
05WG-3031B Tel. Rec.	*
05WG-3032B Tel. Rec.	*
05WG-3036A, B, Tel. Rec. (See Model 05WG-3030C)	148
05WG-3036C Tel. Rec. (See Model 05WG-3032B)	*
05WG-3038A Tel. Rec.	129-4
05WG-3039A, B, Tel. Rec. (See Model 05WG-3030C)	148
05WG-3039C, D, Tel. Rec. (See Model 05WG-3032B)	*
05WG-3045A Tel. Rec. (See Model 05WG-3038A)	129
15BR-1536B, 15BR-1537B	146-2
15BR-1543A, B,	145-2
15BR-1544A, B	143-3
15BR-1548A, 15BR-1549A	191-3
15BR-2756B,	148-3
15BR-2757A	148-3
15BR-3035A Tel. Rec.	155-2
15BR-3048A Tel. Rec.	*
15BR-3053A, B, Tel. Rec.	149-2
15BR-3054A Tel. Rec.	*
15GCA-995A	168-3
15GHH-934A (See Model 05GHH-934A)	167
15GHH-935	166-3
15GHH-936A,	134-2
15GHH-937A	164-3
15GHH-1070	185-4
15GSE-2764A	165-4
15GSE-3043A	*
15GSE-3047A, B, Tel. Rec.	*
15GSE-3047C Tel. Rec.	*
15GSE-3052A Tel. Rec.	*
15GSL-1564A, B, 15GSL-1565A, B, 15GSL-1566A, B, 15GSL-1567A, B,	169-3
15WG-1545A, B,	158-2
15WG-1546A, B,	130-2
15WG-2745C	130-2
15WG-2749E, F,	151-4
15WG-2752D, E,	144-2
15WG-2758A	144-2
15WG-2761A (See Model 15WG-2758A)	144
15WG-2765A (See Model 15WG-2745C)	130
15WG-2765B, C (See Model 15WG-2758A)	144
15WG-3046A, B, C, Tel. Rec.	142-4
15WG-3049A, B, Tel. Rec.	164-2
15WG-3050A, B, Tel. Rec.	145-3
15WG-3051A, B, Tel. Rec. (See Model 15WG-3046A)	142
15WG-3059A Tel. Rec. (See Model 15WG-3049A)	164
25BR-1548A, 25BR-1549B Tel. Rec. (See Model 15BR-1548A)	191
25BR-3055B Tel. Rec.	200-1
25BR-3058A, B, Tel. Rec.	200-1
25BR-3061A Tel. Rec.	200-1
25BR-3067A, B, Tel. Rec.	200-1
25BR-3068A, B, Tel. Rec.	200-1
25BR-3069A Tel. Rec.	200-1
25GAA-935B	181-2
25GAA-994B	170-3
25GAA-996A	182-2
25GDC-994A (See Model 25GSE-1555A)	174-3
25GSE-1556A	174-3
25GSE-3057A Tel. Rec.	*
25GSE-3062A,	195-2
25GSE-3063A Tel. Rec.	195-2
25GSE-3065A Tel. Rec.	193-2
25GSE-3081A Tel. Rec.	195-2
25GSL-1560A,	189-2
25GSL-1561A	198-1
25GSL-1814A	199-1
25GSL-2000A	199-1
25WG-1570A, B, C,	177-4
25WG-1571A, B,	176-4
25WG-1572A, B,	195-3
25WG-1573A	195-3
25WG-2758C, D,	195-3
25WG-2761B (See Model 15WG-2758A)	144
25WG-2765D (See Model 15WG-2758A)	144
25WG-2765E (See Model 15WG-2758A)	144
25WG-2766A, B,	195-3
25WG-3049B Tel. Rec. (See Model 15WG-3049A)	164
25WG-3056A Tel. Rec.	192-2

AIRLINE-Cont.

25WG-3059A Tel. Rec. (See Model 15WG-3049A)	164
25WG-3060A Tel. Rec.	*
25WG-3060A Tel. Rec.	*
25WG-3067A Tel. Rec.	*
25WG-3071A, B, Tel. Rec.	*
25WG-3072A, B, Tel. Rec.	*
25WG-3073A, B, Tel. Rec.	*
25WG-3075A, B, Tel. Rec.	*
25WG-3077A, B, Tel. Rec.	*
25WG-3079A, B, Tel. Rec.	*
54BR-1501A, 54BR-1502A, 54BR-1503A, B, C,	2-26
54BR-1504A, B, C,	3-4
54BR-1505A, B, 54BR-1506A, B,	2-34
54KP-1209A, B,	8-1
54WG-1801A, 54WG-1801B	4-33
54WG-2500A, 54WG-2700A	4-15
64BR-916A	3-34
64BR-916B (See Model 74BR-916B)	17
64BR-917A	10-1
64BR-917B (See Model 64BR-917A)	10
64BR-917C	2-32
64BR-1051A	2
64BR1051B (See Model 64BR1051A)	2
64BR-1205A, 64BR-1206A,	10-3
64BR-1208A	16-4
64BR-1503B, 64BR-1504B (See Models 54BR-1503A, B, C, 54BR-1504A, B, C)	3
64BR-1513A, B,	24-4
64BR-1514A, B	16-5
64BR-1808A	16-5
64BR-2200A (See Model 64BR-1208A)	16
64BR-7000A	51-2
64BR-7100A, 64BR-7110A, 64BR-7120A	57-5
64BR-7300A, 64BR-7310A, 64BR-7320A	54-4
64BR-7810A, 64BR-7820A	53-3
64WG-1050A	10-2
64WG-1050B, 64WG-1050C, 64WG-1050D (See Model 64WG-1050A)	10
64WG-1052A	9-2
64WG-1052B (See Model 64WG-1052A)	9
64WG-1207B	18-5
64WG-1511A, 64WG-1511B, 64WG-1512A, 64WG-1512B	5-5
64WG-1801C (See Models 54WG-1801A, B)	4
64WG-1804A, B,	4-27
64WG-1804C (See Model 64WG-1804A)	4
64WG-1807A,	5-4
64WG-1807B	5-4
64WG-8009A, 64WG-8009B (See Models 64WG-1511A, B, 64WG-1512A, B)	5
64WG-2007A,	5-6
64WG-2007B	5-6
64WG-2009B	6-2
64WG-2010B	18-6
64WG-2500A (See Model 54WG-2500A)	4
64WG-2700A,	6-2
64WG-2700B (See Models 54WG-2500A, 64WG-2700A)	4
74BR-916B	17-5
74BR-1053A	*
74BR-1055A	*
74BR-1501B, 74BR-1502B,	*
74BR-1507, 74BR-1508A,	*
74BR-1513B, 74BR-1514B (See Models 64BR-1513A, B, 64BR-1514A, B)	24
74BR-1812A (See Model 74BR-1812B)	22
74BR-1812B	22-2
74BR-2001A (See Model 74BR-2001B)	23-2
74BR-2001B	23-2
74BR-2003A	24-5
74BR-2701A	*
74BR-2702A (See Model 74BR-2702B)	25
74BR-2702B	25-3
74BR-2707A	*
74BR-2708A	*
74BR-2715A	*
74BR-2717A	*
74GSG-8400A,	60-3
74GSG-8700A	60-3
74GSG-8810A,	52-2
74GSG-8820A	58-4
74HA-8200A	41-1
74HA-810A	35-1
74KR-2706B	43-2
74KR-2713A	24-6
74WG-925A	10
74WG-1050C, D (See Model 64WG-1050A)	10
74WG-1052B (See Models 64WG-1052A, B)	9
74WG-1054A	22-1
74WG-1054B (See Model 74WG-1054A)	22
74WG-1056A	29-1
74WG-1057A	32-2
74WG-1207B (See Model 64WG-1207B)	18
74WG-1509A,	27-1
74WG-1510A	27-1
74WG-1511B, 74WG-1512B (See Models 64WG-1511A, B, 64WG-1512A, B)	5
74WG-1802A	25-4
74WG-1803A (See Model 74WG-1802A)	25

AIRLINE-Cont.

74WG-1804C (See Models 64WG-1804A, B)	4
74WG-1807A, 74WG-1807B (See Models 64WG-1807A, B)	5
74WG-2002A	26-4
74WG-2004A	27-2
74WG-2007B, 74WG-2007C (See Models 64WG-2007A, B)	5
74WG-2009B (See Models 64WG-2009A, B)	6
74WG-2010A (See Model 64WG-2010B)	18
74WG-2010B (See Model 64WG-2500A)	28-1
74WG-2504A, 74WG-2504B, 74WG-2504C (See Model 74WG-2504A)	28
74WG-2505A	18-7
74WG-2700A, 74WG-2700B (See Model 54WG-2700A)	4
74WG-2704A, 74WG-2704C (See Model 74WG-2504A)	28
74WG-2705A, 74WG-2705B (See Model 74WG-2505A)	18
74WG-2709A	26-5
74WG-2711A (See Model 74WG-2505A)	18
84BR-1065A	*
84BR-1503D, 84BR-1504D	*
84BR-1515A, 84BR-1516A	*
84BR-1517A, 84BR-1518A	55-3
84BR-1815B, 84BR-1816B,	55-3
84BR-2005A	*
84BR-2715B	*
84BR-2719A	*
84BR-2726B	*
84BR-3004A Tel. Rec.	91-3
84GC-3396A	52-26
84GDC-1062A	51-3
84GDC-963B	53-4
84GDC-987A	55-4
84GHW-926B	55-4
84GSE-2730A	70-1
84GSE-3011A Tel. Rec.	82-1
84HA-1527A, 84HA-1528A (See Model 94HA-1527C)	67-2
84HA-1529A, 84HA-1530A	85-2
84HA-1810A	69-2
84HA-1810C	69-2
84HA-2727A	99-3
84HA-3002A, 84HA-3002B Tel. Rec.	99-3
84HA-3010A, B, C, C Tel. Rec. (Also see Prod. Chg. Bul. 11—Set 118-1)	94-2
84KR-1209A	*
84KR-1520A	56-4
84KR-2511A	68-4
84WG-1060A	42-1
84WG-1060C (See Model 84WG-1060A)	42
84WG-2015A	38-1
84WG-2506 (See Model 84WG-2721A)	46
84WG-2506B	58-5
84WG-2713A, B	43-3
84WG-2717A (See Model 84WG-2712A)	43
84WG-2714A	36-2
84WG-2714F, C, H, I,	56-5
84WG-2718A, 84WG-2718B, 84WG-2720A	45-5
84WG-2721A	46-3
84WG-2724A (See Model 84WG-2718A)	45
84WG-2728A (See Models 84WG-2718A, B, 84WG-2720A)	45
84WG-2732A (See Model 84WG-2712A, B)	43
84WG-2734A (See Models 84WG-2718A, B, 84WG-2720A)	45
84WG-3006, 84WG-3008, 84WG-3009, (See Model 94WG-3006A) Tel. Rec.	72
94BR-1525A,	88-1
94BR-1526A	88-1
94BR-1533A	89-1
94BR-2740A, 94BR-2741A, B,	89-1
94BR3004, C, Tel. Rec.	91A-3
94BR-3017A Tel. Rec.	89-2
94BR-3017B Tel. Rec. (See Model 94BR-3017A) (Also see Prod. Chg. Bul. 7—Set 110-1)	89
94BR-3021, 94BR-3022A	*
94GAA-3654A	95-1
94GCB-1064A	96-2
94GCB-3023A, B, C, Tel. Rec. (See Model 05GSE-3019A)	116
94GDC-989A	72-3
94GDM-934A (See Model 05GHH-934A)	167
94GSE-2735A, 94GSE-2736A	72-3
94GSE-3011, B (See Model 84GSE-3011A)	82
94GSE-3015A Tel. Rec.	107-2
94GSE-3018A Tel. Rec.	93A-2
94GSE-3025A Tel. Rec.	75-3
94GSE-3033A Tel. Rec.	86-2
94HA-1527C, 94HA-1528C (See Model 84HA1529A)	85
94WG-1059A	75-3
94WG-1804D	86-2
94WG-1811A	99-4
94WG-2742A, C, D	71-5

AIRLINE-Cont.

94WG-2745A	76-4
94WG-2746A, B,	71
94WG-2747A (See Model 94WG-2742A)	71
94WG-2748A, 94WG-2749A	90-1
94WG-2748C (See Model 94WG-2748A)	90
94WG-3006A Tel. Rec.	72-4
94WG-3006B Tel. Rec.	85-3
94WG-3008A, 94WG-3009A Tel. Rec. (See Model 94WG-3006A)	72
94WG-3009B Tel. Rec. (See Model 94WG-3006B)	85
94WG-3016A, B, C, Tel. Rec. (See Model 94WG-3006A Set 72 and Model 05WG-3016A Set 110 Folder 2)	90
94WG-3022A Tel. Rec. (See Model 94WG-3006B)	85
94WG-3026A Tel. Rec. (See Model 94WG-3006B)	85
94WG-3028A Tel. Rec. (See Model 94WG-3006B)	72
94WG-3029A Tel. Rec. (See Model 94WG-3006B)	85

AMC (AIMCEE)-Cont.

20CD, 20C1, 20TG Tel. Rec. (Similar to Chassis) 149-13	149-13
20CD2A-1 Tel. Rec. (See Model 20C2A)	188-3
20T2A-1 Tel. Rec. (See Model 20C2A)	188
24T2A-1 Tel. Rec. (See Model 20C2A)	188
114C, 114T Tel. Rec. (Similar to Chassis)	111-3
116C, 116CD, 116T Tel. Rec. (Similar to Chassis)	111-3
125P	3-27
126	16-1

AMERICAN COMMUNICATIONS (See Liberty)

AMPLIFIER CORP. OF AMERICA

ACA-100DC, ACA-100GE	63-2
----------------------	------

AMPLIPHONE

10	21-1
20	21-12

AMPRO (See Recorder Listing)

ANDREA

BT-VK12 Tel. Rec.	76-5
BT-VL17 (Ch. VL17) Tel. Rec.	152
BT-VL17 (Ch. VL17) Tel. Rec.	152
CO-U15	27-3
CO-VK15, COVK16 (Ch. VK1516, Tel. Rec. (Also see Prod. Chg. Bul. 8—Set 112-1))	103-4
COV-125 Tel. Rec. (See Model BT-VK12)	76
COVL-16 (Ch. VL16) Tel. Rec.	125-3
CO-VL19 (Ch. VL19) Tel. Rec.	168-4
C-VK12 Tel. Rec. (Supp. to CO-VK16) (Also see Prod. Chg. Bul. 8—Set 112-1)	103
CVK-126 Tel. Rec. (See Model BT-VK12)	76
CVL-16 (Ch. VL16) Tel. Rec.	125
CVL-17 (Ch. VL17) Tel. Rec.	152-1
P-163 (Ch. 163)	18-8
T16	21-2
T1-U15	24-7
T-U16	21-3
T-VK12 Tel. Rec. (See Model BT-VK12)	76
TVK-127B, M, Tel. Rec. (See Model BT-VK12)	76
TVL-12 Tel. Rec.	123-3
TVL-16 (Ch. VL16) Tel. Rec.	125
T-VL17 (Ch. VL17) Tel. Rec. (See Model CVL-16)	125
T-VL17 (Ch. VL17) Tel. Rec. (See Model CVL-17)	152
V12-12-2 Tel. Rec.	*
V1-15 Tel. Rec.	*
2C-VL17 (Ch. VL17) Tel. Rec. (See Model CVL-17)	152
2C-VL20 (Ch. VL-20) Tel. Rec.	175-3
Ch. VK1516 (See Model CO-VK15)	103
Ch. VL16 (See Model COVL-16)	125
Ch. VL17 (See Model CVL-17)	152
Ch. VL19 (See Model CO-VL19)	168
Ch. VL-20 (See Model 2C-VL-20)	175

ANSLEY

32	5-27
41 (Paneltone)	4-38
53	24-8
701 Tel. Rec.	71-6

APEX

485	37-2
192A	17-6
817, 920, 924, Tel. Rec.	181-3
91	

ARLINGTON-BENDIX

ARLINGTON-Cont.

318T6A Tel. Rec. (Similar to Chassis) 85-3

318T6A-900 Tel. Rec. (Similar to Chassis) 85-3

318T9A-950 Tel. Rec. (Similar to Chassis) 78-4

321M3C1 Tel. Rec. (Similar to chassis) 182-5

518T6A Tel. Rec. (Similar to Chassis) 85-3

518T9A-918 Tel. Rec. (Similar to Chassis) 78-4

518T10A-916 Tel. Rec. (Similar to Chassis) 78-4

2318T6A-954 Tel. Rec. (Similar to Chassis) 85-3

2318T9A-912 Tel. Rec. (Similar to Chassis) 78-4

ARTHUR ANSLEY

LP-2, LP-3 62-4

LP-4A 82-2

LP-5 (See Model P-5) 108

LP-6, LP-6-S 136-5

LP-7 134-3

P-5 Tel. Rec. 108-4

R-1 200-2

SP-1 60-4

TP-1 173-3

ARTONE

AR14L, AR17L Tel. Rec. 172-3

AR23TV Tel. Rec. 80-1

MST12, MST14, Tel. Rec. 170-4

14TR, 16TR, Tel. Rec. (See Model MST12) 170

17CD (1st Prod.) Tel. Rec. (See Model MST12) 170

17CD (2nd Prod.) Tel. Rec. (See Model AR14L) 172

17CRR (1st Prod.) Tel. Rec. (See Model MST12) 170

17CRR (2nd Prod.) Tel. Rec. (See Model AR14L) 172

17ROG (1st Prod.) Tel. Rec. (See Model AR14L) 170

17ROG (2nd Prod.) Tel. Rec. (See Model AR14L) 172

20CD (1st Prod.) Tel. Rec. (See Model MST12) 170

20CD (2nd Prod.) Tel. Rec. (See Model AR14L) 172

20TR Tel. Rec. (See Model MST12) 170

112X Tel. Rec. (See Model MST12) 170

203D (1st Prod.) Tel. Rec. (See Model MST12) 170

203D (2nd Prod.) Tel. Rec. (See Model AR14L) 172

312 Tel. Rec. (See Model MST12) 170

524 76-6

819 Tel. Rec. (See Model MST12) 170

1000, 1001 Tel. Rec. (See Model AR14L) 172

3163CR Tel. Rec. (See Model AR14L) 170

8163CR, 8193CM Tel. Rec. (See Model MST12) 170

ARVIN

140-P (Ch. RE-209) 25-6

150-TC, 151-TC (Ch. RE-228) (Late) 25-7

150TC, 151TC (Ch. RE-228-1) 39-2

152-T, 153-T 33-1

160T, 161T (Ch. RE-232) 49-5

182TFM (Ch. RE-237) 32-3

240-P (Ch. RE-243) 42-2

241P, 244P, 2410P (Ch. RE-244, RE-254, RE-255, RE-256, RE-259) 47-3

242T, 243T (Ch. RE-251) 52-3

250-P (Ch. RE-248) 43-4

253T, 254T, 255T, 256T (Ch. RE-252) 53-5

264T, 265T (Ch. RE-265) 64-2

280TFM, 281TFM (Ch. RE-253) 44-2

341T (Ch. RE-274) 84-3

350P (Ch. RE-267) 69-3

350-PB (Ch. RE-267-1) 100-4

350-PL (Ch. RE-267-2) (See Model 350-PB) 100

352-PL, 353-PL (Ch. RE-267-2) (See Model 350-PB) 100

355T (Ch. RE-213) (See Model 356T) 78

356T, 357T (Ch. RE-273) 78-2

358-T (Ch. RE-233) (See Model 152-T) 33

360TFM, 361TFM (Ch. RE-260) 70-2

440T, 441T (Ch. RE-278) 96-3

442 (Ch. RE-91) 34-2

444, 444A (Ch. RE-200) 1-3

444AM, 444M (Ch. RE-200M) 23-3

446P (Ch. RE-280) 106-2

450T, 451T (Ch. RE-281) 110-3

460T, 461T (Ch. RE-284) 107-3

462-CB, 462-CM (Ch. RE-287-1) 116-3

480TFM, 481TFM (Ch. RE-277, RE-277-1) 107-4

482CFB, 482CFM (Ch. RE-288-1) 117-4

540T (Ch. RE-278) 143-4

542T (See Model 440T) 96

544, 544A, 544AR (Ch. RE-201) 1-7

547A (Ch. RE-242) 42-3

551T (Ch. RE-297) 154-2

552AN, 552N (Ch. RE-231); 555, 555A (Ch. RE-202) 13-9

ARVIN-Cont.

553 (Ch. RE-308) 159-4

554CCB, 554CCM (Ch. RE-306) 155-3

558 (Ch. RE-204) 3-1-6

580TFM (Ch. RE-313) 152-2

582CFB, 582CFM (Ch. RE-310) 156-4

650-P, (Ch. RE-292) 175-6

655 SWT (Ch. RE-327) 187-2

657-T (Ch. RE-307) 168-5

664, 664A (Ch. RE-206) 3-2-3

664, 664A (Ch. RE-206-1) 29-2

6640 (Ch. RE-206-2) 29-2

665 (Ch. RE-229) 18-1-10

751TB (See Model 551T) 154

2120CM (Ch. TE-289-2, TE-289-3) Tel. Rec. (Also See Prod. Chge. Bul. 20) 120-3

2121TM (Ch. TE-289-2, TE-289-3) Tel. Rec. (See Model 2120CM) (Also See Prod. Chge. Bul. 20) 120

2122TA (Ch. TE-289) 97A-1

2123TM (Ch. TE-289-2, TE-289-3) Tel. Rec. (See Model 2120CM) (Also See Prod. Chge. Bul. 20) 120

2124TC (Ch. TE-289-2, TE-289-3) Tel. Rec. (See Model 2120CM) (Also See Prod. Chge. Bul. 20) 120

2160, 2161, 2162, 2164 (Ch. TE-290) Tel. Rec. 126-3

3100TB, 3100TM, 3101CM, 3120TA, 3121TM (Ch. TE-272-1, TE-272-2) Tel. Rec. 80-2

3160CM (Ch. TE-276) Tel. Rec. 93-2

4080T (Ch. TE-282) Tel. Rec. 104-2

4081T Tel. Rec. (See Model 4080T) 104

4162CM (Ch. TE-286) Tel. Rec. 130-3

5170CB, 5171TM, 5172CB, 5173M (Ch. TE-302, -1, -2, -3, -4) Tel. Rec. (Also See Prod. Chge. Bul. 50) 142-5

5175, 5176 (Ch. TE-320) Tel. Rec. 179-3

520A, 506 (Ch. TE-300) Tel. Rec. 149-3

5210, 5211, 5212 (Ch. TE-315, -1, -2, -3, -4, -5, -5A, -6) (Also See Prod. Chge. Bul. 37) 151-5

5213TM (Ch. TE-334) Tel. Rec. 191-5

6173TM (Ch. TE-331-3) Tel. Rec. *

6173TM-UHF (Ch. TE-332-1) Tel. Rec. *

6175TM (Ch. TE-331) Tel. Rec. 181-4

6179TM (Ch. TE-331-2) Tel. Rec. (See Model 6175TM) 181

6213TB-UHF, 6213TM-UHF (Ch. TE-330, -1, -2, -3, -4) Tel. Rec. *

6213TM (Ch. TE-319) Tel. Rec. 195-4

6215CM (Ch. TE-319) Tel. Rec. 195-4

6215CB-UHF, 6215CM-UHF (Ch. TE-330, -1, -2, -3, -4) Tel. Rec. *

7210CB-UHF, 7210CM-UHF (Ch. TE-341, -2) Tel. Rec. (Also See Prod. Chge. Bul. 63) 188-4

7210CM, CR, 7212CFP, MEA (Ch. TE-337-1) Tel. Rec. 189-3

7212CFP-UHF, 7212MEA-UHF (Ch. TE-341, -2) Tel. Rec. (Also See Prod. Chge. Bul. 63) 188-4

7214CM (Ch. TE-337-1) Tel. Rec. (See Model 7210CM, Ch. TE-337-1) 189

7214CM-UHF (Ch. TE-341, -2) Tel. Rec. (Also See Prod. Chge. Bul. 63) 188-4

7216CB (Ch. TE-337-1) Tel. Rec. (See Model 7210CM, Ch. TE-337-1) 189

7216CB-UHF (Ch. TE-341, -2) Tel. Rec. (Also See Prod. Chge. Bul. 63) 188-4

7218CB, CM, 7219CM (Ch. TE-337-1) Tel. Rec. (See Model 7210CM, Ch. TE-337-1) 189

7218CB-UHF, 7218CM-UHF (Ch. TE-341, -2) Tel. Rec. (Also See Prod. Chge. Bul. 63) 188-4

7219CM-UHF (Ch. TE-341-2) Tel. Rec. (Also See Prod. Chge. Bul. 63) 188-4

7219CM (Ch. TE-341-2) Tel. Rec. (Also See Prod. Chge. Bul. 63) 188-4

Ch. RE-91 (See Model 442) 34

Ch. RE-200 (See Model 444) 1

Ch. RE-200M (See Model 444M) 23

ARVIN-Cont.

Ch. RE-201 (See Model 544) 1

Ch. RE-202 (See Model 552AN) 13

Ch. RE-204 (See Model 558) 3

Ch. RE-206 (See Model 664) 3

Ch. RE-206-1, 206-2 (See Model 664 Late) 29

Ch. RE-209 (See Model 140P) 25

Ch. RE-228 (See Model 150TC) 25

Ch. RE-228-1 (See Model 150TC Late) 39

Ch. RE-229 (See Model 665) 18

Ch. RE-231 (See Model 552AN) 13

Ch. RE-232 (See Model 160T) 49

Ch. RE-233 (See Model 152T) 33

Ch. RE-237 (See Model 182TFM) 32

Ch. RE-242 (See Model 547A) 42

Ch. RE-243 (See Model 240P) 42

Ch. RE-244 (See Model 241P) 47

Ch. RE-248 (See Model 250P) 43

Ch. RE-251 (See Model 242T) 52

Ch. RE-252 (See Model 253T) 53

Ch. RE-253 (See Model 280TFM) 44

Ch. RE-254, 255, 256, 259 (See Model 241P) 47

Ch. RE-260 (See Model 360TFM) 70

Ch. RE-265 (See Model 264T) 64

Ch. RE-267 (See Model 350P) 69

Ch. RE-267-1, RE-267-2 (See Model 350-PB) 100

Ch. RE-273 (See Model 356T) 78

Ch. RE-274 (See Model 341T) 84

Ch. RE-277, RE-277-1 (See Model 480TFM) 107

Ch. RE-278 (See Model 540T) 143

Ch. RE-280 (See Model 446P) 106

Ch. RE-281 (See Model 450T) 110

Ch. RE-284 (See Model 460T) 107

Ch. RE-287-1 (See Model 462-CB) 116

Ch. RE-288-1 (See Model 482CFB) 117

Ch. RE-292 (See Model 650-P) 175

Ch. RE-297 (See Model 551T) 154

Ch. RE-306 (See Model 554CCB) 155

Ch. RE-307 (See Model 657-T) 168

Ch. RE-308 (See Model 553) 159

Ch. RE-310 (See Model 582CFB) 156

Ch. RE-313 (See Model 580TFM) 152

Ch. RE-327 (See Model 655SWT) 187

Ch. TE-272-1, 2 (See Model 3100TB) 80

Ch. TE-276 (See Model 3160CM) 93

Ch. TE-282 (See Model 4080T) 104

Ch. TE-286 (See Model 4162CM) 130

Ch. TE-289 (See Model 2122TM) 97A-1

Ch. TE-289-2, TE-289-3 (See Model 2120CM) 120

Ch. TE-290 (See Model 2160) 126

Ch. TE-300 (See Model 520A) 149

Ch. TE-302, -1, -2, -3, -4 (See Model 5170CB) 142

Ch. TE-315, -1, -2, -3, -4, -5, -5A, -6 (See Model 5210) 151

Ch. TE-319 (See Model 6213TM) *

Ch. TE-320 (See Models 5175, 5176) 179

Ch. TE-330, -1, -2, -3, -4 (See Model 6213TB-UHF) 181

Ch. TE-331, -2 (See Model 6175TM) 181

Ch. TE-331-3 (See Model 6173TM) 181

Ch. TE-332 (See Model 6175TM-UHF) 181

Ch. TE-334 (See Model 5213TM) 191

Ch. TE-337-1 (See Model 7210CM, Ch. TE-337-1) 189

Ch. TE-341, -2 (See Model 7210CB-UHF) 189

ASTORIA

A-21, A-72, A-73L Tel. Rec. (See similar chassis) 182-3

ASTRONIC

T-3 121-4

748 (See Model 53-6) 53-6

ATLAS

AB-45 14-5

AUDAR

AV-7T 166-6

MAS-A "Bingo Amp." 26-6

P-1A 5-10

P-4A 19-3

P-5 5-11

PR-6 44-3

PR-6 13-10

PR-8A 19-4

RE-BA 25-8

Telvar BM-25, BMP-25 62-5

Telvar FMC-12 35-2

Telvar RER-9 65-2

WC-7T (See Model AV-7T) 166

AUDIO DEVELOPMENT (ADC)

71-F 128-3

AUTOMATIC

Tom Boy 27-4

Tom Thumb Buddy 53-7

Tom Thumb Camera-Radio 49-6

Tom Thumb Jr. 26-7

Tom Thumb Personal ATTP 23-4

B-44 60-5

C51 178-4

C-54 186-2

C60 5-20

C-60X (See Model C-60X) 24-10

C300 102-1

C-351 148-4

CL-152B, M 192-3

CL-164B (See Model CL-152B) 192

D20 104-3

D-251 174-4

F-100 103-6

F-151 147-2

F-790 23-5

M-86 34-3

M-90 67-4

P-651 173-4

S-551 146-3

TV-P490 Tel. Rec. 81-3

TV-707, TV-709, TV-710 Tel. Rec. 60-6

TV-712 Tel. Rec. (See Model TV-707) 60

TV-1205 Tel. Rec. (See Model TV-1249) 103

TV-1249, TV1250 Tel. Rec. 103-5

TV-1294 Tel. Rec. (See Model TV-1249) 103

TV-1605 Tel. Rec. (See Model TV-1249) 103

TV-1615 Tel. Rec. (See Model TV-1249) 103

TV-1649, TV-1650, TV-1651 Tel. Rec. 143-5

TV-1694 Tel. Rec. (See Model TV-1249) 103

TV-5006 Tel. Rec. 145-4

TV-5020 Tel. Rec. 134-4

TV-5061 Tel. Rec. 145

TV-5061 (See Model TV-5006) 145

TV-5077 Tel. Rec. (See Model TV-5006) 145

TV-5116R Tel. Rec. (See Model TV-5020) 134

TV-5160 Tel. Rec. (See Model TV-5020) 134

TVX13 Tel. Rec. (See Model TV-707) 60

TVX404 Tel. Rec. (See Model TV-707) 60

601, 602 (Series A) 13-11

601, 602 (Series B) 22-5

612X 1-34

613X (See Model 612X) 1-1

614X, 616X 8-2

640, Series B 10-4

660, 662, 666 22-6

670 22-7

727 21-4

AVIOLA (Also see Record Changer Listings)

509 7-3

511 15-3

601 (See Model 601) 15

612 (See Model 608) 16

BELL-AIR

PL17C Tel. Rec. (Similar to Chassis) 149-13

PL20C Tel. Rec. (Similar to Chassis) 149-13

BELL SOUND SYSTEMS

B-23 75-4

RC-47 (RE-CORD-O-FONE) 30-3

RT-65 130-4

RT-65, B 171-3

350 149-4

352 149-4

374SS 151-6

420 150-4

440L, 440S "Bellphone" 25-9

2075 10-5

2122 77-3

2122A, 2122AR 153-1

2122B 199-1

2122R 76-7

2145, A 161-2

2159 22-8

3715 22-9

3725 22-9

3728M 24-11

3750 31-5

BELLTONE

500 5-33

BELMONT (Also See Raytheon)

A-6D110 17-7

3A6W7 10-7

4B115 *

4B17 2-27

4B112, 4B113 (Series A) 10-6

5D110 22-10

5D112 (Series A) 9-4

5P19 "Boulevard" 9-5

5P113 "Boulevard" 28-2

6D111 2-33

6D120 24-12

8A59 6-4

93A-4 93A-4

22A21, 22AX21, 22AX22 Tel. Rec. 55-5

BENDIX

C172 Tel. Rec. (See Model 2051) 134-5

C174 Tel. Rec. (See Model 2051) 111

C176, B Tel. Rec. (See Model 2051) 111

C182 Tel. Rec. (See Model C172) 134

C192 Tel. Rec. (See Model C172) 134

C200 Tel. Rec. (See Model C172) 134

OAK3 Tel. Rec. 183-2

T170 Tel. Rec. (See Model 2051) 111

T171 Tel. Rec. (See Model C172) 134

T173 Tel. Rec. (See Model 2051) 111

T190 Tel. Rec. (See Model 2051) 111

0526A, 0526B, 0526C, 0526D, 0526E, 0526F 1-22

PAR 80 39-3

21KD Tel. Rec. (See Model OAK3) 183

21K3 Tel. Rec. (See Model OAK3) 183

21T3 Tel. Rec. (See Model OAK3) 183

21X3 Tel. Rec. (See Model OAK3) 183

5512, 5513, 55P2, 55P3 51-4

55X4 58-6

65R4 52-4

69B8, 69MB, 69M9 63-3

7585, 75M5, 75M8, 75P6, 75W5 59-5

79A7 60-7

9583, 95M3, 95M9 60-3

110, 110W, 111, 111W, 112, 114, 115 41-3

235B1, 235M1 (Ch. Codes MA, MB, MC, MD) Tel. Rec. 69-4

300, 300W, 301, 302 40-2

416A 43-5

626MA, 626MB, 626MC, 626M 40-3

626-A (0626A) 12-4

636C, 636D (See Model 636A) 15-4

646A 2-28

656A 2-31

676B, 676C, 676D 5-23

687A 61-3

697A 26-8

736B 10-8

753F, M, W (Ch. C-19) 199-3

847-B 27-5

847-S "Facto Meter" 28-3

951, 951W 136-6

1217, 1217B, 1217D 29-4

1217D (Late) 46-5

1518, 1519, 1524, 1525 37-3

1521 42-4

1531, 1533 43-6

2001, 2002 Tel. Rec. 84-4

2020, 2021 Tel. Rec. (See Model 2001) 84

2025 Tel. Rec. (Also See Prod. Chge. Bul. 16) 99-5

2051 Tel. Rec. (Also See Prod. Chge. Bul. 16) 111-3

2060 Tel. Rec. (See Model 2051) (Also See Prod. Chge. Bul. 16) 111

2070 Tel. Rec. (See Model 2051) 111

207 Tel. Rec. (See Model 2051) (Also See Prod. Chge. Bul. 16) 111

3001, 3002 Tel. Rec. (See Model 2001) 84

3030, 3031 Tel. Rec. (See Model 2001) 84

3033 Tel. Rec. (See Model 2025) 99

3051 Tel. Rec. (See Model 2051) (Also See Prod. Chge. Bul. 16) 111

6001 Tel. Rec. (See Model 2051) (Also See Prod. Chge. Bul. 16) 111

6002 Tel. Rec. (See Model 2025) 99

6003 Tel. Rec. (See Model 2051) (Also See Prod. Chge. Bul. 16) 111

6090 Tel. Rec. (See Model 2051) 111

6100 Tel. Rec. (See Model 2051) (Also See Prod. Chge. Bul. 16) 111

6920 Tel. Rec. (See Model 2051) 111

6990 Tel. Rec. (See Model 2051) 111

7001 Tel. Rec. (See Model 2051) (Also See Prod. Chge. Bul. 16) 111

Ch. C-19 (See Model 753F) 111

BOGEN (See David Bogen)

BREWSTER
9-1084, 9-1085, 9-1086... 2-13

BROCIER
A100P 198-2
CA-2 200-3

BROOK ELECTRONICS INC.
38 (Issue 2), 3C 184-4
10C 41-4
10C2-A 43-7
10C3 72-5
10D (See Model 10C) 41
12A 89-3
12A2, 12A3 (See Model 12A-Set 89-3 and Model 3C-Set 184-4)

BROOKS ELECTRONIC LABS.
ST-14A 183-3
ST-10 195-5

BROWNING
PF-12, RJ-12 47-4
RJ-12A 56-6
RJ-12B 146-4
RJ-14A
(See Model RJ-12A) 56
RJ-20 67-5
RJ-20A 132-3
RJ-22 (See Model RJ20) 67
RV-10 46-6
RV-10A 131-3
RV-11 (See Model RV-10) 46
RV31 198-3

BRUNSWICK
BJ-6836 "Tuscony"
C-3300 "Darby" 28-4
D-1000, D-1100 56-7
D-6876 "Buckingham"
(See Model T-4000) 29
KP221 "Nantucket"
Tel. Rec.
MA212 "Wedgewood"
Tel. Rec.
T-4000, T-4000 1/2 "Buckingham"
T-4400, T-4400 1/2 29-5
T-6000, T-6000 1/2 61-4
T-6000S, T-6000SS, T-6000SX, "Glasgow"
(See Model T-4000) 29
T-9000 (See Model D-1000) 56
512, 513 Tel. Rec. 163-3
B1 816 Tel. Rec. 163
(See Model 512)
911 Tel. Rec.
922B, M Tel. Rec.
5000 42-5
5125 Tel. Rec.
(See Model 512) 163
6165 Tel. Rec.
(See Model 512) 163
8125, 8165 Tel. Rec.
(See Model 512) 163

BRUSH SOUND MIRROR (See Recording Listing)

BRUSH MAIL-A-VOICE (See Recording Listing)

BUICK
980690, 980733 18-9
980744, 980745 19-5
980782 62-6
980797, 980798 59-6
980868 104-4
980979 (See Model 980868) 104
981111 (See Model 980868) 104

BUTLER BROS. (See Air Knight or Sky Rover)

CADILLAC (Auto Radio)
7241938
7253207
7256609 60-8
7258155
7258755 109-2
7260205 (See Model 7258755) 109
7260405 152-3
7260905 (See Model 7260405) 152

CALBEST
1651, 1652, 1653, 1654
Tel. Rec.
1916, 1917 Tel. Rec.
1920, 1921 Tel. Rec.
(See Model 1916)
1924 Tel. Rec.
(See Model 1916)
2016, 2017 Tel. Rec.
(See Model 1916)
2020, 2021 Tel. Rec.
(See Model 1916)
2024 Tel. Rec.
(See Model 1916) 93A-5

CALLMASTER (See Lyman)

CAPEHART
B-504-P16 Tel. Rec. (See Model 461P Set 87 and 35P7 Set 135)
TC-20 (Ch. C-297) 132-4
TC-62 (Ch. CR-71) 192-4
T-30 141-3
11172M (Ch. CT-27) Tel. Rec. (See Ch. CT-27) 160
11172M, 2C172M (Ch. CT-52) Tel. Rec. 187-3
2120M (Ch. CT-38) Tel. Rec. (See Ch. CT-27) 160
3C172M (Ch. CT-27) Tel. Rec. (See Ch. CT-27) 160
3C212B, M (Ch. CT-57) Tel. Rec. (See Model 11172M) 187
4H212B, M (Ch. CT-57) Tel. Rec. (See Model 11172M) 187
5F212M (Ch. CT-57) Tel. Rec. (See Model 11172M) 187

CAPEHART—Cont.
6F212B (Ch. CT-57) Tel. Rec. (See Model 11172M) 187
7F212M (Ch. CT-57) Tel. Rec. (See Model 11172M) 187
8F212B (Ch. CT-57) Tel. Rec. (See Model 11172M) 187
9F212M (Ch. CT-57) Tel. Rec. (See Model 11172M) 187
10 (Ch. C-312) 166-7
10W212M (Ch. CTR68) Tel. Rec. (For TV Ch. Only See Model 11172M—Set 187-3)
11W211M (Ch. CT58/C305) Tel. Rec. (For TV Ch. Only See Model 11172M—Set 187-3)
12F27M (Ch. CT-74)
19N4, 21P4, 24N4, 24P4, 26N4, 29P4, 30P4, 31N4, 31P4 65-3
32P9, 33P9 64-3
34P10 (See Model 32P9) 64
35P7 (Ch. CT-57) 135-4
114N4, 116N4, 116P4, 118P4 (See Model 19N4) 65
115P2 67-6
3198X, MX (Ch. CT-27) Tel. Rec. (See Ch. CT-27) 160
320-B, 320-M (Ch. CX-331) Tel. Rec. (See Model 323M) (Also See Prod. Chge. Bul. 13 -Set 122-1 & Bul. 24 -Set 142-1) 112
320BX, MX (Ch. CT-27) Tel. Rec. (See Ch. CT-27) 160
321ABX, AMX (Ch. CT-27) Tel. Rec. (See Ch. CT-27) 160
321-B, 321-M, 322-B, 322-M (Ch. CX-331) Tel. Rec. (See Model 323M) (Also See Prod. Chge. Bul. 13—Set 122-1 and Bul. 24—Set 142-1) 112
322RABX, RAMX (Ch. CT-27) Tel. Rec. (See Ch. CT-27) 160
323M (Ch. CX-33F), 324M, 325F, 325-M (Ch. CX-33) Tel. Rec. (Also See Prod. Chge. Bul. 13 -Set 122-1 & Bul. 24 -Set 142-1) 112-3
324BX (Ch. CT-27) Tel. Rec. (See Ch. CT-27) 160
325AFX (Ch. CT-27) Tel. Rec. (See Ch. CT-27) 160
326-M (Ch. CX-331) Tel. Rec. (See Model 323M) (Also See Prod. Chge. Bul. 13 -Set 122-1 & Bul. 24 -Set 142-1) 112
326MX (Ch. CT-27) Tel. Rec. (See Ch. CT-27) 160
331BX, MX, 335 BX, MX, 336CX, FX (Ch. CT-38) Tel. Rec. (See Ch. CT-27) 160
332-B, 332-M, 334-M (Ch. CX-33F) Tel. Rec. (See Model 323M) (Also See Prod. Chge. Bul. 13 -Set 122-1 & Bul. 24 -Set 142-1) 112
338MX (Ch. CT-45) Tel. Rec. (See Ch. CT-27) 160
339MX (Ch. CT-38) Tel. Rec. (See Ch. CT-27) 160
340X, 341X (Ch. CT-45) Tel. Rec. (See Ch. CT-27) 160
413P, 414P
(See Model 115P2) 67
461P, 462P12 Tel. Rec. 87-2
501P, 502P, 504P Tel. Rec. (See Model 461P Set 87 and 35P7 Set 135)
610P, 651P, 661P Tel. Rec. 95A-1
1002F, 1003M, 1004B (Ch. P-B) (See Model 35P7) 135
1005B, M, W (Ch. C-296), 1006 B, M, W (Ch. C-287) 132-5
1007AM (Ch. C-318) 150-5
3001, 3002 (Ch. CX-30, A, Prod. C-272) Tel. Rec. 99A-1
3001, 3002 (Ch. CX-30A-2, Prod. C-272) Tel. Rec. 99A-2
3004-M (Ch. CX-31, Prod. C-268) Tel. Rec. 93A-5
3005 (Ch. CX32, Prod. C-279) Tel. Rec. 93A-5
3006-M (Ch. CX-31, Prod. C-274) Tel. Rec. (See Model 3004-M) 93A
3007 (Ch. CX-30, Prod. C-276) 99A-2
3008 (Ch. CX-32, Prod. C-278 Tel. Rec. (See Model 3005) 93A
3011B, M, 3012B, M (Ch. CX-33) Tel. Rec. (See Model 323M) 112
4001-M (Ch. CX-31, Prod. C-268) Tel. Rec. (See Model 3004-M) 93A
4002-M (Ch. CX-31, Prod. C-274) Tel. Rec. (See Model 3004-M) 93A
Ch. C-312 (See Model 10) 166
Ch. C-318 (See Model 1007AM) 150
Ch. CR71 (See Model TC-62) 192
Ch. CT-27 (Ch. Series CX-33DX) Tel. Rec. 160-2

CAPEHART—Cont.
Ch. CT-38 (Ch. Series CX-33DX) Tel. Rec. (See Ch. CT-27) 160
Ch. CT-45 (Ch. Series CX-33DX) Tel. Rec. (See Ch. CT-27) 160
Ch. CT-52 (Ch. Series CX-36) (See Model 11172M) 187
Ch. CT-74 (See Model 12F27M)
Ch. CT-75, CT-77
Ch. CX-33, CX-33F (See Model 323M) 112
CX-33DX Series Tel. Rec. (See Ch. CT-27) 160
Ch. CX-36 (See Model 11172M) 187
Ch. Series CX-37

CAPITOL
D-17 30-4
T-13 28-5
U-24 29-6

CARDWELL, ALLEN D.
CE-26 14-6

CAVENDISH (See Bell Air)

CB5 COLUMBIA (Also See Air King)
17C18, 17M18, 17T18 (Ch. 817, -1) Tel. Rec. 188-5
20M18, 20M28, 20T18, 21C11, B (Ch. 1021) Tel. Rec. 199-4
21C21 (Ch. 1021) Tel. Rec. 199-4
21C31B (Ch. 1021) Tel. Rec. 199-4
21C41 (Ch. 1021) Tel. Rec. 199-4
21T11 (Ch. 1021) Tel. Rec. 199-4
Ch. 817, -1 (See Model 17C18)
Ch. 820, -1 (See Model 17C18)
PA-20 13-12
PA-20A 18-13
PA-30 19-7

CENTURY (Also See Industrial Television)
226, 326 (Ch. IT-26R, IT-35R, IT-39R, IT-46R) Tel. Rec. 99A-7
721, 821, 921, 1021 (Ch. IT-21R) Tel. Rec. 97A-8

CENTURY (20th)
100X, 101, 104 12-5
200 21-5
300 21-6

CHALLENGER
CCB 63-4
CC18 67-7
CC30 68-6
CC60 70-3
CC68 66-4
CD6 65-4
20R 69-5
60R 62-7
200 (See Model 20R) 69
600 (See Model 60R) 62

CHANCELLOR (Also See Radionic)
35P 30-25

CHEVROLET
985792 6-5
985793 19-6
985986
986067 90-2
986146 28-6
986240 75-6
986241 58-7
986388 104-5
986443 189-4
986515 149-5
986516 150-6

CHRYSLER (See Mapar)

CISCO
1A5 37-4
9A5 20-3

CLARION
C100 1-5
C101 5-9
C102 9-6
C103 6-6
C104 1-4
C105 (See Model C104) 1
C105A 6-7
C108 (Ch. 101) 5-8
150
155
11011 17-8
11305 18-11
11411-N 30-5
11801 23-6
11802V-M (See Model 11801) 23
12110M 31-6
12310-W 41-5
12708 61-5
12801 46-7
13101 62-8
13201, 13203 60-9
14601 66-5
14965 102-2
16703 Tel. Rec.

CLARK
PA-10 12-6
PA-10A 18-12
PA-20 13-12
PA-20A 18-13
PA-30 19-7

CLEARSONIC (See U. S. Television)

COLLINS AUDIO PRODUCTS
FMA-6 99-6
45-D 72-6

COLLINS RADIO
75A-1 34-4
75A-2 171-4

COMMANDER INDUSTRIES
Commander 3 Tube Record Player 17-10
CD61P 19-9

CONCERTONE (See Recorder Listing)

CONCORD
IN434, IN435, IN436 (Similar to Chassis) 98-5
IN437 (Similar to Chassis) 121-2
IN549 (Similar to Chassis) 38-5

CONCORD—Cont.
IN551 (Similar to Chassis) 38-6
IN554, IN555 (Similar to Chassis) 55-10
IN556, IN557 (Similar to Chassis) 109-7
IN559 (Similar to Chassis) 90-7
IN560 (Similar to Chassis) 109-7
IN561, IN562 (Similar to Chassis) 97-8
IN563 (Similar to Chassis) 136-10
IN819 (Similar to Chassis) 69-7
6C51B 19-8
6C51V (See Model 6C51B) 19-4
6E51B 20
6F26C 19-10
6R3ARC 21-7
7R3APW (See Model 6R3ARC) 21
6T61W 22-11
7G26C 20-5
1-402, 1-403 45-6
1-411 48-5
1-501 (See 6E51B) 20
1-504 55-6
1-509, 1-510 (See 6C51B) 19-7
1-516, 1-517 49-7
1-601, 1-602, 1-603 20
1-607 (See 7G26C) 45-7
1-608 (See 6F26W) 19
1-609 (See 6T61W) 22
1-611 46-8
1-1201 55-7
2-105 (See 315WL) 53
2-106 54-6
2-200, 2-201, 2-218, 2-219, 2-232, 2-235, 2-236, 2-237, 2-238, 2-239, 2-240 62-9
315WL, 315WM 53-8
325WL, 325WM (See 2-106) 54

CONRAC
10-M-36, 10-W-36 (Ch. 36) Tel. Rec. (See Ch. 36) 110
11-B-36 (Ch. 36) Tel. Rec. (See Ch. 36) 110
12-M-36, 12-W-36 (Ch. 36) Tel. Rec. (See Ch. 36) 110
13-B-36 (Ch. 36) Tel. Rec. (See Ch. 36) 110
14-M-36, 14-W-36 (Ch. 36) Tel. Rec. (See Ch. 36) 110
15-F-36 (Ch. 36) Tel. Rec. (See Ch. 36) 110
16-B-36 (Ch. 36) Tel. Rec. (See Ch. 36) 110
17-P-39 (Ch. 39) Tel. Rec. (See Ch. 36) 110
18-M-39, 18-W-39 (Ch. 39) Tel. Rec. (See Ch. 36) 110
20-M-39, 20-W-39 (Ch. 39) Tel. Rec. (See Ch. 36) 110
21-B-39 (Ch. 39) Tel. Rec. (See Ch. 36) 110
22-P-39 (Ch. 39) Tel. Rec. (See Ch. 36) 110
23-M-390, 23-W-390 (Ch. 39) Tel. Rec. (See Ch. 36) 110
24-M-36 (Ch. 36) Tel. Rec. (See Ch. 36) 110
25-W-36 (Ch. 36) Tel. Rec. (See Ch. 36) 110

IMPORTANT

PHOTOFACT Publications are available from:

YOUR PHOTOFACT DISTRIBUTOR

The easiest way to own the world's finest Radio-TV Service Data is to subscribe to PHOTOFACT Folder Sets with your distributor, who will see to it that you receive each Set as published (issued 2 to 4 Sets per month).

PHOTOFACT Folder Sets, Each Only \$ 1.50

Deluxe Binders for filing PHOTOFACT Sets, Each Only 3.39

Complete PHOTOFACT Volumes, Each Only 18.39
(Each Volume includes 10 Sets of PHOTOFACT Folders in Deluxe Binder. Vol. 1 contains Sets 1-10; Vol. 2 contains Sets 11-20, etc.)

PHOTOFACT EASY-PAY PLAN. You can own a library of PHOTOFACT Volumes for a down payment of only 18.39
Easy monthly payments—no interest or carrying charges. For full Easy-Pay details, see your distributor or write to Howard W. Sams & Co., Inc.

CONRAC—CROSLEY

CONRAC—Cont.

26-B-36 (Ch. 36) Tel. Rec. 110
 [See Ch. 36]
 27-M-40, 27-W-40 (Ch. 40) Tel. Rec. (See Ch. 40) 140
 28-B-40 (Ch. 40) Tel. Rec. (See Ch. 40) 140
 29-P-40 (Ch. 40) Tel. Rec. (See Ch. 40) 140
 30-M-40, 30-W-40 (Ch. 40) Tel. Rec. (See Ch. 40) 140
 31-P-40 (Ch. 40) Tel. Rec. (See Ch. 40) 140
 32-M-44, 32-W-44 (Ch. 44) Tel. Rec. (See Ch. 40) 140
 33-B-44 (Ch. 44) Tel. Rec. (See Ch. 40) 140
 34-P-44 (Ch. 44) Tel. Rec. (See Ch. 40) 140
 35-M-61, 35-W-61 (Ch. 61) Tel. Rec. (See Ch. 61) 185
 36-B-61 (Ch. 61) Tel. Rec. (See Ch. 61) 185
 37-P-61 (Ch. 61) Tel. Rec. (See Ch. 61) 185
 38-B-61, 38-M-61 (Ch. 61) Tel. Rec. (See Ch. 61) 185
 39-M-61 (Ch. 61) Tel. Rec. (See Ch. 61) 185
 40-M-64, 40-W-64 (Ch. 64) Tel. Rec. (See Ch. 61) 185
 41-B-64 (Ch. 64) Tel. Rec. (See Ch. 61) 185
 42-P-64 (Ch. 64) Tel. Rec. (See Ch. 61) 185
 43-B-64, 43-M-64 (Ch. 64) Tel. Rec. (See Ch. 61) 185
 Ch. 39 Tel. Rec. 110-4
 Ch. 39 Tel. Rec. 110
 Ch. 40 Series Tel. Rec. 140-4
 Ch. 44 Tel. Rec. (See Ch. 40) (Also See Prod. Chge. Bul. 27-Set 148-1) 185-5
 Ch. 61, 64 Series Tel. Rec. 140-5

CONTINENTAL ELECTRONICS
 (See Skyweight)

CONVERSA-FONE

MS-5 (Master Station) 16-7
 SS-5 (Sub-Station) 16-7

CO-OP

6AWC2, 6AWC3, 6A47WCR, 6A47WT, 6A47WTR 56-8

CORONADO

FA43-8965 (See Model 43-8965) Tel. Rec. 86
 FA43-8966 Tel. Rec. 182-3
 K-21 (43-9041) Tel. Rec. K-72 (43-9031) Tel. Rec. (See Model K-21) 182
 K-731 (43-9030) Tel. Rec. (See Model K-21) 182
 TV43-8908 Tel. Rec. 145-5
 TV43-8960 Tel. Rec. 101-2
 OSRA1-43-7755A, OSRA1-43-7755B 115-2
 OSRA1-43-7901A 115-2
 OSRA2-43-8230A 162-3
 OSRA2-43-8515A 110-5
 OSRA4-43-8935A Tel. Rec. 103-7
 OSRA4-43-9876A 103-7
 OSRA33-43-8120A 110-6
 OSRA37-43-8360A 102-3
 OSTV1-43-8945A Tel. Rec. 145-5
 OSTV1-43-9005A, OSTV1-43-9006A Tel. Rec. (See Model 43-8945A) 145
 OSTV1-43-9010A Tel. Rec. 128-4
 OSTV2-43-8950A Tel. Rec. (See Model OSTV2-43-9010A) 146
 OSTV2-43-9010A Tel. Rec. 146-5
 OSTV2-43-9018A Tel. Rec. 153-2
 15RA1-43-7654A 147-3
 15RA1-43-7902A 134-6
 15RA2-43-8230A (See Model OSRA2-43-8230A) 162
 15RA33-43-8245A 174-5
 15RA33-43-8260A 169-4
 15RA37-43-9230A 173-5
 15TV1-43-8957A, B Tel. Rec. 162-4
 15TV1-43-8958A, B Tel. Rec. (Also See Prod. Chge. Bul. 34, Set 162-1) 161-3
 15TV1-43-9008A Tel. Rec. 15TV1-43-9015A, B, 15TV1-43-9016A, B Tel. Rec. (See Model 15TV1-43-8957A) 162
 15TV1-43-9020A, B, 15TV1-43-9021A, B Tel. Rec. (See Model 15TV1-43-8958A) (Also See Prod. Chge. Bul. 34, Set 162-1) 161
 15TV2-43-9022A Tel. Rec. 163-4
 15TV2-43-9045A, B Tel. Rec. 199-5
 15TV2-43-9045A Tel. Rec. 199-5
 15TV2-43-9060A Tel. Rec. 199-5
 15TV2-43-9060B Tel. Rec. 43-2027 11-3
 43-5005 28-36

CORONADO—Cont.

43-6301 7-4
 43-6451 10-10
 43-6485 46-9
 43-6730 (See Model 43-8685) 11
 43-7601, 43-7602 (See Model 43-7601B) 10
 43-7601B 10-11
 43-7651 9-7
 43-7652 (See Model 43-7651) 9-5
 43-7851 7-5
 43-8101 (See Model 94RA31-43-8115A) 81
 43-8130C, 43-8131C (See Model 94RA33-43-8130C) 82
 43-8160 12-7
 43-8177 (See Model 43-8178) 21
 43-8178 21-8
 43-8180 10-11
 43-8190 19-11
 43-8201 (See 43-8178) 7-5
 43-8213 12-8
 43-8240, 43-8241 7-5
 43-8305 8-3
 43-8312A 8-4
 43-8330 19-12
 43-8351, 43-8352 12-9
 43-8353, 43-8354 28-7
 43-8420 24-13
 43-8470 (See Model 43-8305) 8
 43-8471 (See Model 43-8312A) 8
 43-8576B 9-8
 43-8685 11-4
 43-8685 Tel. Rec. 86-3
 43-9196 14-35
 43-9201 24-14
 94RA1-43-6945A 69-6
 94RA1-43-7605A 65-5
 94RA1-43-7656A 73-2
 94RA1-43-7657A 73-2
 94RA1-43-7751A 87-3
 94RA1-43-8510A, 94RA1-43-8511A 71-7
 94RA1-43-8510B, 94RA1-43-8511B 75-6
 94RA2-43-8230A (See Model OSRA2-43-8230A) 162
 94RA4-43-8129A, 94RA4-43-8130A, 94RA4-43-8130B, 94RA4-43-8131A, 94RA4-43-8131B 62-10
 94RA31-43-8115A, B, 94RA31-43-8116A 81-5
 94RA33-43-8130C, 94RA33-43-8131C 82-3
 94TV1-43-8940A Tel. Rec. 94TV1-43-9002A Tel. Rec. 94TV2-43-8970A, 94TV2-43-8971A, 94TV2-43-8972A, 94TV2-43-8973A, 94TV2-43-8985A, 94TV2-43-8986A, 94TV2-43-8987A, 94TV2-43-8993A, 94TV2-43-8994A, 94TV2-43-8995A Tel. Rec. 78-4
 94TV6-43-8953A Tel. Rec. 106-3
 165 (See Model 94RA31-43-8115A) 81
 197, 197U (See Model 948751-43-8115A) 81
 2027 (See Model 43-2027) 11
 5005 (See Model 43-5005) 28
 6301 (See Model 43-6301) 7
 6451 (See Model 43-6451) 10
 6485 (See Model 43-6485) 46
 6730 (See Model 43-6885) 11
 6945A (See Model 94RA1-43-6945A) 69
 7601, 7602 (See Model 43-7601B) 10
 7601B (See Model 43-7601B) 10
 7605A (See Model 94RA1-43-7605A) 65
 7651 (See Model 43-7651) 9
 7652 (See Model 43-7651) 9
 7654A (See Model 15RA37-43-9230A) 147
 7656A, 7657A (See Model 94RA1-43-7656A) 73
 7755A, 7755B (See Model OSRA1-43-7755A) 101
 7751A (See Model 94RA1-43-7751A) 87
 7851 (See Model 43-7851) 47
 7901A (See Model OSRA1-43-7901A) 115
 7902A (See Model 15RA1-43-7902A) 134
 8101 (See Model 94RA31-43-8115A) 81
 8115A, B, 8116A (See Model 94RA31-43-8115A) 81
 8120A (See Model OSRA33-43-8120A) 110
 8129A, 8130A, 8130B, 8131A, 8131B (See Model 94RA4-43-8129A) 62
 8130C, 8131C (See Model 94RA33-43-8130C) 82
 8160 (See Model 43-8160) 12
 8177 (See Model 43-8178) 21
 8178 (See Model 43-8178) 21
 8180 (See Model 43-8180) 10
 8190 (See Model 43-8190) 19
 8201 (See Model 43-8178) 21
 8213 (See Model 43-8213) 7
 8230A (See Model OSRA2-43-8230A) 162
 8240, 8241 (See Model 43-8240) 12
 8245A, 8246A (See Model 15RA33-43-8245A) 174

CORONADO—Cont.

8305 (See Model 43-8305) 8
 8312A (See Model 43-8312A) 8
 8330 (See Model 43-8330) 19
 835, 8352 (See Model 43-8351) 12
 8353, 8354 (See Model 43-8353) 28
 8360A (See Model OSRA37-43-8360A) 102
 8365 (See Model OSRA33-43-8365) 169
 8420 (See Model 43-8420) 24
 8470 (See Model 43-8305) 8
 8471 (See Model 43-8312A) 8
 8510A, 8511A (See Model 94RA1-43-8510A) 71
 8510B, 8511B (See Model 94RA1-43-8510B) 75
 8515A (See Model OSRA2-43-8515A) 110
 8576B (See Model 43-8576B) 9
 8685 (See Model 43-8685) 11
 8908 Tel. Rec. 86-3
 8935A Tel. Rec. 86-3
 8940A Tel. Rec. (See Model 94TV1-43-8940A) 78
 8945A (See Model OSTV1-43-8945A) 145
 8948A, 8949A Tel. Rec. 15TV4-43-8948A) 175
 8950A Tel. Rec. (See Model OSTV2-43-9010A) 146
 8953A Tel. Rec. (See Model 94TV6-43-8953A) 106
 8957A, B Tel. Rec. (See Model 15TV1-43-8957A) 162
 8958A, B Tel. Rec. (See Model 15TV1-43-8958A) 161
 8960 Tel. Rec. 86-3
 8965 Tel. Rec. 86-3
 8966 Tel. Rec. 86-3
 8970A, 8971A, 8972A, 8973A, 8985A, 8986A, 8987A, 8993A, 8994A, 8995A Tel. Rec. (See Model 94TV2-43-8970A) 78
 9002A Tel. Rec. (See Model 94TV1-43-9002A) 146
 9005A, 9006A Tel. Rec. (See Model OSTV1-43-8945A) 145
 9008A Tel. Rec. 9010A Tel. Rec. (See Model OSTV2-43-9010A) 146
 9010B Tel. Rec. (See Model OSTV2-43-9010B) 153
 9014A Tel. Rec. (See Model OSTV1-43-9014A) 128
 9012A, 9013A Tel. Rec. 9015A, B, 9016A, B (See Model 15TV1-43-8957A) 162
 9021A, B, 9021A, B (See Model 15TV1-43-8958A) (Also See Prod. Chge. Bul. 34, Set 162-1) 161
 9022A Tel. Rec. (See Model OSTV2-43-9022A) 183
 9025A, B, 9026A, B Tel. Rec. (See Model 15TV2-43-9025A) 144
 9030 (See Model K-731 (43-9030)) 182
 9031 (See Model K-72 (43-9031)) 182
 9041 (See Model K-21 (43-9041)) 182
 9101A, 9102A Tel. Rec. (See Model 15TV2-43-9101A) 152
 9196 (See Model 9196) 14
 9201 (See Model 43-9201) 24
 9230A (See Model 15RA37-43-9230A) 173
 9814A (See Model 94RA31-43-9814A) 79
 9816A (See Model OSRA4-43-9876A) 103

CORONET

C2 6-8

CRESCENT (Also See Changer and Recorder Listings)

H-16A1 76-8

CRESTWOOD (See Recorder Listing)

CROMWELL (Mercantile Stores)

1010 88-2
 1020 89-5

CROSLEY

DU-17CDB, CDM, CHB, CHM, CHN, CHNI, COB, TOB, TOL, TOLL, TOM (Ch. 356-1) 168-6
 DU-17CDB, CDM, CHNI, COL, COM (Ch. 356-3, -4) Tel. Rec. (See Model DU-17CDB, Ch. 356-1) (Also See Prod. Chge. Bul. 58-Set 192-1) 168
 DU-17PDB, PDM, PH2, PHM, PHN, PHNI (Ch. 359 and Radio Ch. 360, 361) Tel. Rec. 163-4

CROSLEY—Cont.

DU-20CDM, CHB, CHM, COB, COM (Ch. 357) Tel. Rec. 175-8
 DU-21CDM1, CDN, CHM, COB, COL, COLB, COM (Ch. 357-1) Tel. Rec. (See Model DU-20CDM) 175
 EU-17 COM, TOB, TOM (Ch. 380, 383) Tel. Rec. 186-3
 EU-17COLB (Ch. 396) 193-3
 EU-17COLBU (Ch. 396) *
 EU-17COLU (Ch. 396) *
 EU-17TOLA, TOLB (Ch. 385) Tel. Rec. (See Model EU-17COLB) 193
 EU-17TOLBU (Ch. 396) *
 EU-17TOLU (Ch. 396) *
 EU-17CDB, CDM, CDN, COB, COM (Ch. 381, 384) Tel. Rec. (See Model EU-17COM) 186
 EU-21COLBD, COLD (Ch. 386) Tel. Rec. (See Model EU-17COL) 193
 EU-21COLBE, COLE (Ch. 387) Tel. Rec. (See Model EU-17COL) 193
 EU-21COLBU, EU-21COLU (Ch. 394) Tel. Rec. *
 EU-21 COMU, COBU, CDMU, CDBU, CDMU, EU-21PDBU, EU-21PDMU (Ch. 392, UHF Ch. 391 and Radio Ch. 362-1) Tel. Rec. *
 EU-21TOL, TOLB (Ch. 386) Tel. Rec. (See Model EU-17COL) 193
 EU-21TOLBU, EU-TOLU (Ch. 393) Tel. Rec. *
 S11-4421MU, S11-4444MU, S11-4533MU (Ch. 331-4) Tel. Rec. 153-3
 S11-4594MU (Ch. 321-4) Tel. Rec. (See Model S11-4421MU) 153
 S11-47281U, S11-47481U (Ch. 331-4) Tel. Rec. (See Model S11-4421MU) 152-5
 S17CDD1, S17CDD2, S17CDD3, S17CDD4 (Ch. 331-4) Tel. Rec. (See Model S11-4421MU) 153
 S17COC3 (Ch. 331-4) Tel. Rec. (See Model S11-4421MU) 153
 S20CDD1, S20CDD2, S20CDD3 (Ch. 323-6) Tel. Rec. *
 9-101 58-8
 9-102 50-4
 9-103, 9-104W 60-10
 9-105, 9-105W 59-7
 9-113, 9-114W 53-9
 9-117 51-5
 9-118W (See Model 9-102) 50
 9-119, 9-120W 50-5
 9-121, 9-122W 54-8
 9-201, 9-202M, 9-203B 52-5
 9-204, 9-205M 63-5
 9-207M 57-6
 9-209, 9-212M 53-10
 9-213B (See Model 9-209) 53
 9-214M, 9-214ML 65-6
 9-203M, 9-403M-2 Tel. Rec. 79-4
 9-404M Tel. Rec. (See Model 9-403M) 79
 9-407, 9-407M-1, 9-407M-2 Tel. Rec. 66-6
 9-409M-3 Tel. Rec. 94-3
 9-413B, 9-413B-2, 9-414B Tel. Rec. (See Model 9-403M) 79
 9-419M1, 9-419M1-LD, 9-419M2, 9-419M3, 9-419M3-LD Tel. Rec. 94
 9-420M Tel. Rec. (See Model 9-403M) 79
 9-422M, 9-422MA Tel. Rec. 81-6
 9-423M Tel. Rec. 91A-4
 9-424B Tel. Rec. (See Model 9-403M) 79
 9-425 Tel. Rec. 95A-2
 10-135, 10-136E, 10-137, 10-138, 10-139, 10-140 (Ch. 285) 93-3
 10-307M, 10-308, 10-309 80-4
 10-401 Tel. Rec. 95-2
 10-404MU, 10-404MU1 Tel. Rec. 114-3
 10-412MU Tel. Rec. (See Model 10-404MU) 114
 10-414MU Tel. Rec. 116-4
 10-414M1 (Ch. 292) Tel. Rec. (See Model 10-414MU) 116
 10-416MU Tel. Rec. (See Model 10-414MU) 116
 10-416M1 (Ch. 292) Tel. Rec. (See Model 10-414MU) 116
 10-418MU Tel. Rec. (See Model 10-404MU) 114
 10-419MU Tel. Rec. 104-6
 10-420MU Tel. Rec. (See Model 10-404MU) 114
 10-421MU Tel. Rec. 106-4
 10-422MU Tel. Rec. 125-1A
 10-428MU Tel. Rec. 129-5

CROSLEY—Cont.

10-429M (Ch. 292) Tel. Rec. (See Model 10-414MU) 116
 10-429MU Tel. Rec. (See Model 10-414MU) 116
 11-100U, 11-101U, 11-102U, 11-103U, 11-104U, 11-105U (Ch. 301) 127-5
 11-106U, 11-107U, 11-108U, 11-109U (Ch. 302) 155-5
 11-114U, 11-115U, 11-116U, 11-117U, 11-118U, 11-119U (Ch. 303) 135-5
 11-126U, 11-127U, 11-128U, 11-129U (Ch. 312) 125-5
 11-207MU, 11-208BU (Ch. 333) 142-6
 11-301U, 11-302U, 11-303U, 11-304U, 11-305U (Ch. 303) 124-3
 11-341MU (Ch. 320) Tel. Rec. 147-4
 11-442MU (Ch. 331) Tel. Rec. 124-4
 11-443MU Tel. Rec. (Also See Prod. Chge. Bul. 22-Set 138-1) 126
 11-445MU (Ch. 321, 1, -2) Tel. Rec. (See Model 11-442MU) 126
 11-446MU (Ch. 325) Tel. Rec. (See Model 11-442MU) 126
 11-447MU (Ch. 321, 1, -2) Tel. Rec. (See Model 11-442MU) 126
 11-453MU (Ch. 331) Tel. Rec. (See Model 11-442MU) 126
 11-4594MU, MU (Ch. 321, -1, -2) Tel. Rec. (See Model 11-442MU) 126
 11-460MU (Ch. 331) Tel. Rec. (See Model 11-442MU) 126
 11-461MU (Ch. 320) Tel. Rec. (See Model 11-441MU) 147
 11-465WU (Ch. 321, 1, -2) Tel. Rec. (See Model 11-442MU) 126
 11-4708U (Ch. 331) Tel. Rec. (See Model 11-442MU) 126
 11-471BU (Ch. 320) Tel. Rec. (See Model 11-441MU) 147
 11-4728U (Ch. 331) Tel. Rec. (See Model 11-442MU) 126
 11-4738U Tel. Rec. (See Model 11-442) (Also See Prod. Chge. Bul. 22-Set 138-1) 126
 11-475BU (Ch. 321, 1, -2) Tel. Rec. (See Model 11-442MU) 126
 11-476BU (Ch. 325) Tel. Rec. (See Model 11-442MU) 126
 11-477BU (Ch. 321, 1, -2) Tel. Rec. (See Model 11-442MU) 126
 11-483BU (Ch. 331) Tel. Rec. (See Model 11-442MU) 126
 11-484MU 126
 11-550MU (Ch. 337) 139-5
 11-560BU (Ch. 337) (See Model 11-550MU) 139
 17CDD1, 17CDD2, 17CDD3, 17CDD4 (Ch. 331, 331-1, 331-2) Tel. Rec. (See Model 11-442) 126
 20CDD1, 20CDD2, 20CDD3 (Ch. 323, 323-4) *
 46FA, 46FB 15-5
 56FA, 56FB, 56FC 31-7
 56PA, 56PB 10-9
 56TA-L, 56TC-L 4-9
 56TD 21-9
 56TG 4-3
 56TJ 5-14
 56TN-L, 56TW-L (See Models 56TA-L, 56TC-L) 4
 56TP 8-5
 56TZ, 56TS 17-11
 56TU 10-13
 56TZ (See Model 56TZ) 33
 58TA 36-4
 58TC (See Model 58TW) 38
 58TK 34-5
 58TL (See Model 58TA) 36
 58TW 38-2
 66CA, 66CP, 66CO (See Model 66CS) 18
 66CS, 66CSM 18-14
 66TA, 66TC, 66TW 5-15
 68CP, 68CR 37-5
 68TA, 68TW 40-4
 68CR, 68CS 12-10
 87CO (Revised Models 86CR, 86CS) 36-5
 88CR (See Model 87CO) 36
 88TA, 88TC 38-3
 88TA, 88TC (Revised) 43-8
 106CP, 106CS 7-6
 146CS 25-10
 148CP, 148CO, 148CR 42-6
 107TA Tel. Rec. 34-5
 348CP-TR1, 348CP-TR2, 348CP-TR3 Tel. Rec. *
 Ch. 292 Tel. Rec. (See Model 10-414MU) 116
 Ch. 301 (See Model 11-100U) 127

CROSLY-Cont.

Ch. 302 (See Model 11-106U) 155
 Ch. 303 (See Model 11-301U) 124
 Ch. 312 (See Model 11-126U) 125
 Ch. 320 (See Model 11-441MU) 147
 Ch. 321, 321-1, 321-2 (See Model 11-445MU) 126
 Ch. 321-4 Tel. Rec. (See Model S11-442M1U) 153
 Ch. 323 (See Model 11-443MU) 126
 Ch. 323-3, 323-4 (See Model 20CD1) 153
 Ch. 323-6 (See Model S20CDC1) 153
 Ch. 325 (See Model 11-446MU) 126
 Ch. 330 (See Model 11-114U) 135
 Ch. 331, -1, -2 (See Model 11-442) 126
 Ch. 331-4 Tel. Rec. (See Model S11-442M1U) 153
 Ch. 333 (See Model 11-207MU) 142
 Ch. 337 (See Model 11-550MU) 139
 Ch. 356-1, 356-2 (See Model DU-17CDB) 168
 Ch. 357 Tel. Rec. (See Model DU-20CDM) 175
 Ch. 357-1 Tel. Rec. (See Model DU-20CDM) 175
 Ch. 359 Tel. Rec. (See Model DU-17PDM) 163
 Ch. 360, 361 Tel. Rec. (See Model DU-17PDB) 163
 Ch. 380 (See Model EU-17COM) 186
 Ch. 381 (See Model EU-21CDB) 186
 Ch. 383 (See Model EU-17COM) 186
 Ch. 384 (See Model EU-21CDB) 186
 Ch. 385, 386, 387 (See Model EU-17COL) 193
 Ch. 390 Tel. Rec. (See Model EU-21 COMU) *
 Ch. 392 (See Model EU-21PDBU) *
 Ch. 393 (See Model EU-21OLBU) *
 Ch. 394 (See Model EU-21COLBU) *
 Ch. 396 (See Model EU-17COLBU) *

CROSLY CAR

5MX080 2*

CROYDON

C17FM Tel. Rec. (Also see Prod. Chge. Bul. 57-Set 191-1) 186-4
 C21FCM, C21FTM (See Model C17FTM) (Also see Prod. Chge. Bul. 57-Set 191-1) 186

CRYSTAL PRODUCTS (See Coronet)

DALBAR
 Barcombo Jr., Barcombo Sr. 10-14
 MB "Tanamo" 8-34
 100-1000 Series 10-15
 400 9-9

DAVID BOGEN

AM901 195-6
 DB-10 102-4
 DP-16 106-8
 E66 85-4
 E75 83-2
 E1620 *
 EX35 76-9
 EX-326 198-4
 FM801 30-6
 GO-50 26-9
 GO-125 22-12
 GX50 25-11
 H15 90-6
 H30 79-5
 H50, H150, H2L50 78-6
 H623 71-8
 HE-10 154-3
 HOH, HOL 80-5
 HO10 183-5
 HO50 84-5
 HO125 87-4
 HX30 82-4
 HX50 75-7
 HX-632 169-5
 LOH, LOL (See Model HOH) 80
 LP16 86-4
 PH10 73-3
 PX (See Model HO10) 183
 PX10 68-5
 PX15 72-7
 RX (See Model HO10) 183
 R501 33-3
 R602 67-8
 R-604 175-9
 2AR, 2RS 28-5
 11D 77-5
 11U 76-10
 11X 74-2
 21D (See Model 11D) 77
 21U (See Model 11U) 76
 21X (See Model 11X) 74

DEARBORN

100 22-13

DECCA

DP-11 24-15
 DP-29 19-13
 PT-10 25-12

DELCO

R-700, R-1220, R-1229 42-7
 R-1227, R-1228, R-1229 15-6
 R-1230-A, R-1231-A 14-33
 R-1232-A 7-7
 R-1233 42-8
 R-1234, R-1235 7-7
 R-1236, R-1237 29-7
 R-1238 38-4
 R-1241 62-11
 R-1242 31-8
 R-1243 32-4
 R-1244, R-1245, R-1246 52-6
 R-1248, R-1249, R-1250 66-7
 R-1251, R-1252 21-10
 R-1253, R-1254, R-1255 47-7
 R-1408, R-1409 15-7
 R1410 *
 TV-71, TV-71A Tel. Rec. 99A-3
 TV-101, TV-102 Tel. Rec. 88-3
 TV-160 Tel. Rec. 85-5
 TV-201 Tel. Rec. 59-8

DeSOTO (See Mopar)

DETROIT

554-1.61A (See Aria Model 554-1.61A) 7
 558-1.49A 7-8
 568-13-221D 9-10
 571, 571A, 571B, 571L 10-16
 571AL, 571BL 9-11
 611A, 571AX, 571BX 8-6
 572-220-226A 8-7
 576-1.6A 8-7
 579 7-9
 579-2-58B (See Model 579) 7
 582 19-14
 610-A 50-6
 611-1 50-6
 626 Series 11-5
 7156 48-6
 7270 16-8

DEWALD

A500, A5001, A500W, A501, A502, A503 4-22
 A504, A505 16-9
 A-507 26-10
 A-509 31-9
 A-514 27-6
 A602, A605 16-10
 A608 (See Model A602) 16
 B-400 35-3
 B-401 34-6
 B-402 45-8
 B-403 52-7
 B-504 43-9
 B-506 38-5
 B-510 34-7
 B-512 35-4
 B-515 63-4
 B-612 42-9
 B-614 56-9
 BT-100, BT-101 Tel. Rec. 79-6
 C-516 64-4
 C-800 69-7
 CT-1 Tel. Rec. (See Model BT-100) 79
 CT-102, CT-103, CT-104 Tel. Rec. 82-5
 D-E517A 167-5
 D-508 106-5
 D-517 131-4
 D-518 100-5
 D519 (See Model B-506) 38
 D-616 102-5
 DT-120, DT-122 Tel. Rec. 100-6
 DT-160 Tel. Rec. (See Model CT-102) 82
 DT-161 Tel. Rec. (See Model DT-120) 100
 DT-162, DT-163 Tel. Rec. 118-5
 DT-162R, DT-163A, R Tel. Rec. (Also see Prod. Chge. Bul. 58-Set 192-1) 136-7
 DT-190 Tel. Rec. (See Model DT-162) 118
 DT-190D Tel. Rec. (See Model DT-162R) (Also see Prod. Chge. Bul. 58-Set 192-1) 136
 DT-1020, DT-1020A Tel. Rec. (See Model DT-120) 100
 DT-1030, DT-1030A Tel. Rec. (See Model DT-120) 100
 DT-X-160 Tel. Rec. 100
 E-520 (See Model DT-120) 100
 E-522 128-5
 ET-140, ET-141 Tel. Rec. (See Model DT-162) 118
 ET-140R, ET-141R Tel. Rec. (See Model DT-162R) 118
 (Also see Prod. Chge. Bul. 58-Set 192-1) 136
 ET-190D, R Tel. Rec. (See Model DT-162R) (Also see Prod. Chge. Bul. 58-Set 192-1) 136
 FT-200, FT-201 Tel. Rec. (See Model DT-162R) (Also see Prod. Chge. Bul. 58-Set 192-1) 136
 F-404 181-5
 F405 198-5
 F-523 170-5
 511 71-9

DODGE (See Mopar)

DORN'S (See Bell Air)

DREXEL (Mutual Buying Syndicate)

17CG1, 17TW Tel. Rec. (Similar to Chassis) 149-13

DUKANE

1A45-A 184-5
 1A100, 1B300 189-6
 1U325 185-6
 4A100 186-5
 4B100 (See Model 4A100) 186
 4C25 Flexiphone 187-4
 4C100 200-4

DUMONT

RA-101 Tel. Rec. *
 RA-102B1, RA-102B2, RA-102B3 Tel. Rec. *
 RA-103 Tel. Rec. (Also see Prod. Chge. Bul. 6-Set 108-1) 90-3
 RA-103D Tel. Rec. (Also see Prod. Chge. Bul. 9-Set 114-1) 93-4
 RA-104A Tel. Rec. (See Model RA-103D) (Also see Prod. Chge. Bul. 6-Set 108-1) 93
 RA-105 Tel. Rec. (Also see Prod. Chge. Bul. 6-Set 108-1) 72-8
 RA-105B Tel. Rec. 95-3
 RA-106 Tel. Rec. (Supp. to RA-105, Set 72) (Also see Prod. Chge. Bul. 6-Set 108-1) 99A-4
 RA-108A Tel. Rec. (See Model RA-105B) 95
 RA-109 A-FAS, Tel. Rec. (See Model RA-109) (Also see Prod. Chge. Bul. 6-Set 108-1) 110
 RA-109-A1, -A2, -A3, -A5, -A6, -A7 Tel. Rec. (Also see Prod. Chge. Bul. 14-Set 124-1) 110-7
 RA-110 (See Model RA-103D) (Also see Prod. Chge. Bul. 9-Set 114-1) 93
 RA-111-A1, -A2, -A4, -A5, Tel. Rec. 106-6
 RA-112, -A2, -A3, -A4, -A5, -A6 Tel. Rec. (Also see Prod. Chge. Bul. 38-Set 170-1) 119-5
 RA-113-B1, -B2, -B3, -B4, -B5, -B6, -B7, -B8 Tel. Rec. (See Model RA-112A) (Also see Prod. Chge. Bul. 38-Set 170-1) 119
 RA-116A Tel. Rec. (See Model RA-117-A1, -A3, -A5, -A6, -A7 Tel. Rec. 131-5
 RA-120 Tel. Rec. (See Model RA-113) (Also see Prod. Chge. Bul. 51-Set 185-1) 119
 RA-130A Tel. Rec. (See Model RA-109) (Also see Prod. Chge. Bul. 54-Set 188-1) 110
 RA-147A Tel. Rec. (See Model RA-117A) (Also see Prod. Chge. Bul. 49-Set 183-1) 131
 RA-160, -A1 Tel. Rec. (Also see Prod. Chge. Bul. 55-Set 189-1) 179-4
 RA-162, -B1, -B4, -B5, -B6, -B7, -B21 through 26 Tel. Rec. (See Model RA-161) (Also see Prod. Chge. Bul. 55-Set 189-1) 179
 RA-164-A1 Tel. Rec. (Also see Prod. Chge. Bul. 60-Set 194-1) 189-7
 RA-165-B1, -B2, -B3, -B5 Tel. Rec. (See Model RA-164) (Also see Prod. Chge. Bul. 60-Set 194-1) 189
 Andover Model RA-117-A6 (See Model RA-117A) 131
 Andover (See Model RA-147A) 131
 Ardmore Model RA-112-A1, -A4 (See Model RA-112A) 119
 Banbury Model RA-162-B4 (See Model RA-160) 179
 Banbury Model RA-162-B21 through 826 (See Model RA-160) 179
 Beverly Model RA-165-B2 (See Model RA-164) 189
 Bradford (See Model RA-108A) 95
 Brookville Model RA-113-B1, -B2 (See Model RA-113) 119
 Burlingame Model RA-113-B5, -B6 (See Model RA-113) 119
 Carleton Model RA-117-A3 (See Model RA-117A) 131
 Chatham (See Model RA-103) 90
 Chesler (See Model RA-147A) 131
 Clifton (See Model RA-102) *
 Clinton Model RA-164-A1 (See Model RA-164) 189
 Clup 20 (See Model RA-106A) 99
 Colony (See Model RA-105A) 72
 Devon Model RA-160-A1 (See Model RA-160) 179
 Devonshire (See Model RA-101) *
 Dynasty (See Model RA-162) 179
 Fairfield (See Model RA-110A) 93
 Flanders Model RA-162-B5 (See Model RA-160) 179

DUMONT-Cont.

Guilford Model RA-111-A2, -A5 (See Model RA-111A) 106
 Hampshire (See Model RA-101) *
 Hanover Model RA-109-A2, -A6 (See Model RA-109A) 110
 Hanover (See Model RA-109A-FAS) 110
 Hastings (See Model RA-104A) 93
 Manchu (See Model RA-106A) 99
 Mansfield (See Model RA-108A) 95
 Meadowbrook II (See Model RA-147A) 131
 Millard Model RA-165-B1 (See Model RA-164) 189
 Mt. Vernon Model RA-112-A3, -A6 (See Model RA-112A) 119
 Newbury (See Model RA-162) 179
 Park Lane Model RA-117-A7 (See Model RA-117A) 131
 Parklane (See Model RA-147A) 131
 Plymouth (See Model RA-101) *
 Putnam Model RA-111-A1, -A4 Tel. Rec. (See Model RA-111A) 106
 Reverse (See Model RA-101) *
 Reverse II Model RA-113-B5, -B4 (See Model RA-113) 119
 Ridgewood Model RA-165-B4 (See Model RA-164) 189
 Royal Sovereign (See Model RA-119A) 156
 Rumson (See Model RA-103D) 93
 Savoy (See Model RA-103) 90
 Sheffield (See Model RA-103D) 93
 Shelburne Model RA-165-B5 (See Model RA-164) 189
 Sherbrooke Models RA-109-A3, -A7 (See Models RA-109A) 110
 Sherbrooke (See Model RA-109A-FAS) 110
 Sherbrooke (See Model RA-130A) 175
 Sherwood (See Model RA-101) *
 Somerset (See Model RA-162) 179
 Stratford (See Model RA-105A) 72
 Strathmore Model RA-117-A5 (See Model RA-117A) 131
 Sumter Model RA-117-A1 (See Model RA-117A) 131
 Sussex (See Model RA-105B) 95
 Tarrytown (See Model RA-120) 119
 Tarrytown Models RA-113-B7, -B8 (See Model RA-113) 119
 Wakefield Model RA-165-B3 (See Model RA-164) 189
 Wellington (See Model RA-104A) 93
 Westerly Model RA-112-A2, -A5 (See Model RA-112A) 119
 Westbury (See Model RA-105A) 72
 Westbury II (See Model RA-109A-FAS) 110
 Westminster (See Model RA-101) *
 Westminster II (See Model RA-116A) 179
 Westwood (See Model RA-110A) 93
 Whitehall (See Model RA-105A) 72
 Whitehall II (See Model RA-130A) 175
 Whitehall II Model RA-162-B7 Tel. Rec. (See Model RA-160) 179
 Wickford Model RA-162-B1 Tel. Rec. (See Model RA-160) 179
 Wimbledon Model RA-162-B6 Tel. Rec. (See Model RA-160) 179
 Winslow (See Model RA-109A-FAS) 110
 Winslow Model RA-109-A1, -A5 (See Model RA-109A) 110

DUOSONIC

K1, K2 19-15
 K3, K4 19-16

DYNAVOX

AP-514 (Ch. AT) 28-9
 M-510 15-8
 Swingmaster 27-7
 3-P-801 36-3

ECA

101 (Ch. AA) 1-25
 102 14-7
 104 13-14
 105 16-11
 106 7-10
 108 3-6
 121 13-15
 131 16-12
 132 45-9
 201 15-9
 204 32-5

ECHOPHONE (Also See Hallcrafters)

EC-1A *
 EC-113 3-13
 EC-306 14-8
 EC-403, EC-404 22-14
 EC-600 4-18
 EK-102, EK-103 64-5
 EK-306 (See Model EC-306) 14

EDWARDS

Fidelotuner 33-4

EICOR (Also see Recorder Listing)

15 135-6

EKOTAPE (See Recorder Listing)

ELCAR

602 5-19

ELECTONE

TS53 12-34

ELECTRO

B20 14-9

ELECTROMATIC

APH301-A, APH301-C 7-11
 606A, 607A 5-32

ELECTRO-TONE

555 13-16
 706, 712 (See Model 555) 13

ELECTRONIC CORP. OF AMERICA (See ECA)

ELECTRONIC SPECIALTY CO. (See Ranger)

E/L (ELECTRONIC LABS.)

7S (Sub-Station) (See Model 76RU) 20
 76E, 76K, 76M, 76W 4
 76RU ("Radio-Utiliphone") 20-6
 710B, 710M, 710T, 710W, Orthosonic (Ch. 2875) 20-7
 710PB, 710PC Orthosonic (Ch. 2887) 24-16
 2660 "Master Utiliphone" 8-8
 2701 4-28
 3000 Orthosonic 31-10

EMERSON

501, 502 (Ch. 120000, 120029) 2-1
 503 (Ch. 120000, 120029) 1-18
 504 (Ch. 120000, 120029) 2
 (See Models 501, 502) 8-9
 505 (Ch. 120002) 5
 505 (Ch. 120041) (See Model 523) 5
 506 6-9
 507 8-10
 508 (Ch. 120008) 7-12
 509 (See Model 507) 8
 510, 510A (Ch. 120000, 120029) 5-36
 511 (See Model 507) 8
 511 (Ch. 120010) (See Model 541) 16
 512 (Ch. 120056) 9-12
 512 (Ch. 120056) 26-11
 514 (Ch. 120007) 27-8
 515, 516 (Ch. 120056) 12-11
 (See Model 512 Ch. 120056) 26
 517 (Ch. 120010) (See Model 541) 16
 518 (See Model 507) 8
 519 (Ch. 120030) 30-7
 (See Models 501, 502) 2
 521 (Ch. 120013, 120031) 7-13
 522 (See Model 507) 8
 523 17-12
 524 30-8
 525 20-8
 527 (Ch. 120019) Tel. Rec. 21-13
 528 (Ch. 120038) 18-15
 529, 529-9 (Ch. 120028) 530 (Ch. 120056) 32-6
 531, 532, 533 11-6
 534 (Ch. 120007) (See Models 514 Ch. 120007) 27
 535 20-9
 536 (Ch. 120036) 24-17
 536A 23-7
 537 23-7
 538 (Ch. 120051) (See Model 549 Ch. 120051) 26
 539 9-13
 540A (Ch. 120042) 20-10
 541 16-13
 542 (See Model 521) 7
 543, 544 (Ch. 120046) 19-30
 545 (Ch. 120047) Tel. Rec. Photofac Servicer 82
 546 (Ch. 120058) 21-15
 547A (Ch. 120050) 25-13
 548 (Ch. 120051) 30-8
 549 (Ch. 120051) 26-12
 550 (Ch. 120006) (See Model 512 Ch. 120006) 9
 550 (Ch. 120056) (See Model 512 Ch. 120056) 26
 551A (See Model 536A) 24
 552 (See Model 525) 20
 553A (See Model 536A) 24
 556, 557 (Ch. 120018B) 70-4
 557B (Ch. 120048B) 43-10
 558 (Ch. 120058) 31-11
 559A (Ch. 120059) 31-12
 560 (Ch. 120016) 25-14
 561 (Ch. 120001B) 63-7
 563 (Ch. 120063B) 73-4
 564 (Ch. 120027) (See Model 540A Ch. 120042) 20
 565 (Ch. 120018B) 70
 (See Model 556) 70

EMERSON—FADA

EMERSON—Cont.

566 (Ch. 120051) (See Model 549 Ch. 120051) 26
 567 (Ch. 120016) (See Model 566 Ch. 120016) 25
 567 (Ch. 120042) (See Model 540A) 20
 568A (Ch. 120070A) 58-9
 569A (Ch. 120062A) 42-10
 570 (Ch. 120064) 97-3
 571 (Ch. 120066) 46-25
 571 (Ch. 120066B) *
 571 (Ch. 120086B) *
 572 (Ch. 120065) (See Model 540A Ch. 120042) 20
 573B (Ch. 120039B) 42-11
 574 (Ch. 120044) 97
 (See Model 570) 97
 575 (Ch. 120068A, 120068B) 85-6
 576A (Ch. 120069A) 40-5
 577B (Ch. 120128) 41-6
 578 (Ch. 120050) (See Model 547A Ch. 120050) 61-6
 579A (Ch. 120034A) 61-6
 580 (Ch. 120064) 97
 (See Model 570) 97
 581 (Ch. 120144A, B) 68-7
 582 (See Model 548) 30
 583 (See Model 573B) 42
 584 (See Model 558) 31
 585 (Ch. 120025B) 61-7
 585 (Ch. 120088B, 120090B, 120090D) *
 586 (Ch. 120023B, 120083B) 72-9
 587 (Ch. 120033A, B) 71-10
 588 (See Model 547A) 25
 590 (Ch. 120144A, B) 67-9
 591 (Ch. 120055A) 67-9
 593 (Chassis 120063B) (See Models 563) 73
 594, 595 (Ch. 120071A) (See Model 581) 61
 596 (See Model 579A) 68
 597 (Ch. 120043B) 90-5
 599 (Ch. 120075B) 69-8
 600 (Chassis 120103-B) Tel. Rec. (Also See Prod. Chge. Bul. 9-Set 114-1) 87-6
 601 (Chassis 120075B) (See Model 571) 69
 602 (Ch. 120072A, 120082A) 56-10
 603 (Chassis 120063B) (See Model 563) 73
 604A (See Model 576A) 40
 605 (Ch. 120076B) 66-8
 606 (Ch. 120064) Tel. Rec. (See Model 571) 46
 606 (Ch. 120066B) *
 606 (Ch. 120087B-D) Tel. Rec. (See Model 571 Ch. 120086B) 76
 606 (Ch. 120086B) Tel. Rec. (See Model 571 Ch. 120086B) 76
 607 (Ch. 120074A) (See Model 569) 90
 608A (Ch. 120089B) Tel. Rec. 84-6
 609 (Chassis 120084-B) Tel. Rec. 90-6
 610 (Chassis 120100A, B) (See Model 581) 71
 611, 612 (Ch. 120087B-D) Tel. Rec. (See Model 571 Ch. 120086B) 76
 613A (Ch. 120085A, B) 79-7
 614, B, BC, C (Ch. 120110, B, BC, C) Tel. Rec. 97-4
 614D (Ch. 120095-B) Tel. Rec. 95A-3
 615 (Ch. 120001B) (See Model 561) 63
 616 (Chassis 120100A, B) (See Model 587) 71
 618 (Ch. 120090B, D) Tel. Rec. *
 619 (Ch. 120092D) Tel. Rec. (See Model 571 Ch. 120086B) 76
 620 (Ch. 120091D-QD) Tel. Rec. (See Model 571 Ch. 120086B) 76
 621 (Ch. 120098B) Tel. Rec. 108-5
 622 (Ch. 120098P) Tel. Rec. (See Model 621) 108
 623 (Ch. 120101A, B) (See Model 590) 87
 624 (Ch. 120087B-D) Tel. Rec. (See Model 571 Ch. 120086B) 76
 625 (Ch. 120105B) 103-8
 626 (Ch. 120104B) Tel. Rec. (See Model 608A) 84
 627 (Ch. 120107B) Tel. Rec. (See Model 571 Ch. 120086B) 76
 628 (Ch. 120098B) Tel. Rec. (See Model 621) 108
 629 (Ch. 120148B) Tel. Rec. (See Model 631) 93A-6
 629B, 629C (Ch. 120120) Tel. Rec. 119-6
 629D (Ch. 120124B) Tel. Rec. 116-5
 630 (Ch. 120099B) Tel. Rec. (See Model 621) 108
 631 (Ch. 120109) Tel. Rec. 93A-6
 632 (Ch. 120096B) Tel. Rec. 93A-7

EMERSON—Cont.

633 (Ch. 120114) Tel. Rec. (See Model 631) 93A
 634B (Ch. 120097B) 111-4
 635 (Ch. 120108) 92-1
 636A (Ch. 120106A) 99-7
 637, B, BC, C (Ch. 120110, B, BC, C) Tel. Rec. (See Model 614) 97
 637A (Ch. 120095-B) Tel. Rec. (See Model 614D) 95A
 638 (Ch. 120087D) Tel. Rec. (See Model 571) 76
 639 (Ch. 120103B) Tel. Rec. (See Model 600) (Also See Prod. Chge. Bul. 9-Set 114-1) 87
 640 (Ch. 120112) 93-5
 641B (Ch. 120125B) 120-5
 642 (Ch. 120117A) 98-3
 643A (Ch. 120111A) 91-4
 644, B, BC, C (Ch. 120113, B, BC, C) Tel. Rec. (See Model 614) 97
 645 (Ch. 120115) 94-4
 646A (Ch. 120121A) 646B (Ch. 120121B) 102-6
 647, B, BC, C (Ch. 120113, B, BC, C) Tel. Rec. (See Model 614) 97
 648B (Ch. 120110E) Tel. Rec. (See Model 614) 97
 648B (Ch. 120134B, G, H) Tel. Rec. (See Model 661B) (Also See Prod. Chge. Bul. 48) 137
 649A (Ch. 120094A) Tel. Rec. 106-7
 650 (Ch. 120113C) Tel. Rec. (See Model 614) (Ch. 120110) 97
 650, 650B (Ch. 120118B) Tel. Rec. 113-2
 650D (Ch. 120123-B) Tel. Rec. (Also See Prod. Chge. Bul. 48, Set 182-1) 109-3
 650F (Ch. 120138-B) Tel. Rec. 133-1A
 651B (Ch. 120120) Tel. Rec. (See Model 629B) 119
 651C (Ch. 120109) Tel. Rec. (See Model 631) 93A
 651C (Ch. 120124) Tel. Rec. (See Model 629D) 116
 651D (Ch. 120124, B) Tel. Rec. (See Model 629D) 116
 652 (Ch. 120032B) (See Model 642) 98
 653 (Ch. 120080B) (See Model 642) 98
 653B (Ch. 120136-B) 159-5
 654, 654B (Ch. 120118B) Tel. Rec. (See Model 650) 113
 654D, 655D (Ch. 120123B) Tel. Rec. (See Model 650D) (Also See Prod. Chge. Bul. 48, Set 182-1) 109
 654F (Ch. 120138-B) Tel. Rec. (See Model 650F) 133-1A
 655B (Ch. 120123-B) Tel. Rec. (See Model 650D) 109
 655F (Ch. 120138-B) Tel. Rec. (See Model 650F) 133-1A
 656B, 657B (Ch. 120122B) 111-5
 658B (Ch. 120124, B) Tel. Rec. (See Model 629D) 116
 658C (Ch. 120124) Tel. Rec. (See Model 629D) 116
 658D (Ch. 120124B) Tel. Rec. *
 660B (Ch. 120133B) Tel. Rec. 131-6
 661B (Ch. 120134B, G, H) Tel. Rec. (Also See Prod. Chge. Bul. 48, Set 182-1) 137-4
 662B, 663B (Ch. 120127-B, 120128-B) Tel. Rec. (Also See Prod. Chge. Bul. 18-Set 130-1) 125-6
 664B (Ch. 120133-B) Tel. Rec. (See Model 660B) 131
 665-B (Ch. 120131-B and Radio Ch. 120130-B) Tel. Rec. 146-6
 666B (Ch. 120135B, G, H and Radio Ch. 120132B) Tel. Rec. (Also See Prod. Chge. Bul. 27-Set 148-1) 133-5
 667B, 668B (Ch. 120134B, G, H) Tel. Rec. (See Model 661B) (Also See Prod. Chge. Bul. 48, Set 182-1) 137
 669B (Ch. 120129B, D) Tel. Rec. (Also See Prod. Chge. Bul. 24, Set 142-1, and Prod. Chge. Bul. 47, Set 181-1) 126-5
 669B (Ch. 120148-B) Tel. Rec. *
 671B (Ch. 120137-B) 118-6
 671D (Ch. 120137D) (See Model 671B) 118
 672B (Ch. 120097-B) 131-7
 673B (Ch. 120133-B) Tel. Rec. (See Model 660B) 131
 674B (Ch. 120134B, G, H) Tel. Rec. (See Model 661B) (Also See Prod. Chge. Bul. 48, Set 182-1) 137
 675B (Ch. 120129B, D) Tel. Rec. (See Model 669B) (Also See Prod. Chge. Bul. 47, Set 181-1) 126
 676B (Ch. 120140B) Tel. Rec. 128-6

EMERSON—Cont.

676D (Ch. 120144B, G, H) Tel. Rec. (Also See Prod. Chge. Bul. 48, Set 182-1) 138-4
 676F (Ch. 120143B) Tel. Rec. (Also See Prod. Chge. Bul. 48, Set 184-1) 148-6
 677B, 678B (Ch. 120134B, G, H) Tel. Rec. (See Model 661B) (Also See Prod. Chge. Bul. 48, Set 182-1) 137
 679B (Ch. 120116-B) 142-7
 680B (Ch. 120144-B) Tel. Rec. (See Model 676D) 138
 680B (Ch. 120144G, H) (See Model 676D) 138
 680D (Ch. 120140B) Tel. Rec. (See Model 676B) 128
 680D (Ch. 120144B, G, H) Tel. Rec. (See Model 676D) (Also See Prod. Chge. Bul. 48, Set 182-1) 138
 681B (Ch. 120140B) Tel. Rec. (See Model 676B) 128
 681D (Ch. 120144B, G, H) Tel. Rec. (See Model 676D) (Also See Prod. Chge. Bul. 48, Set 182-1) 138
 681F (Ch. 120143B, H) Tel. Rec. (See Model 676F) (Also See Prod. Chge. Bul. 50-Set 184-1) 148
 683B (Ch. 120141-B) Tel. Rec. *
 684B, 685B (Ch. 120134B, G, H) Tel. Rec. (See Model 661B) 137
 686B (Ch. 120143, G, H) Tel. Rec. (See Model 676D) (Also See Prod. Chge. Bul. 48, Set 182-1) 138
 686B (Ch. 120140B) Tel. Rec. (See Model 668) 128
 686F (Ch. 120143B, H) Tel. Rec. (See Model 676F) (Also See Prod. Chge. Bul. 50-Set 184-1) 148
 688F (Ch. 120142B) Tel. Rec. (See Model 676F) (Also See Prod. Chge. Bul. 50-Set 184-1) 148
 687B (Ch. 120144B, G, H) Tel. Rec. (See Model 676D) (Also See Prod. Chge. Bul. 48, Set 182-1) 138
 687D (Ch. 120140-B) Tel. Rec. (See Model 676B) 128
 687F (Ch. 120143B, H) Tel. Rec. (See Model 676F) (Also See Prod. Chge. Bul. 50-Set 184-1) 148
 687F (Ch. 120142B) Tel. Rec. (See Model 676F) (Also See Prod. Chge. Bul. 50-Set 184-1) 148
 688B, 689B, 690B (Ch. 120129B) Tel. Rec. (See Model 669B) (Also See Prod. Chge. Bul. 24, Set 142-1, and Prod. Chge. Bul. 47, Set 181-1) 126
 691B (Ch. 120145-B) 160-3
 692B, 693B, 694B (Ch. 120129B, D) Tel. Rec. (See Model 669B) (Also See Prod. Chge. Bul. 24, Set 142-1, and Prod. Chge. Bul. 47, Set 181-1) 126
 695B (Ch. 120146-B) 162-5
 696B (Ch. 120144B, G, H) Tel. Rec. (See Model 676D) (Also See Prod. Chge. Bul. 48, Set 182-1) 138
 696F (Ch. 120143B, H) Tel. Rec. (See Model 676F) (Also See Prod. Chge. Bul. 50-Set 184-1) 148
 696F (Ch. 120142B) Tel. Rec. (See Model 676F) (Also See Prod. Chge. Bul. 50-Set 184-1) 148
 697B (Ch. 120129B, D) Tel. Rec. (See Model 669B) (Also See Prod. Chge. Bul. 47, Set 181-1) 126
 698B (Ch. 120127B) Tel. Rec. (See Model 662B) 125
 699D (Ch. 120160-B) Tel. Rec. 165-1A
 700B, 701B (Ch. 120153-B) Tel. Rec. 169-6
 700D, 701D (Ch. 120158-B) Tel. Rec. 166-9
 701F (Ch. 120143-B) Tel. Rec. (See Model 676F) 148
 702B (Ch. 120136-B) (See Model 653B) 159
 703B (Ch. 120097-B) 160-4
 704 (Ch. 120154-B) 184-6
 706B, 707B (Ch. 120156-B) 176-5
 708B (Ch. 120165-B) (See Model 706B) 176
 709A (Ch. 120162-A) Tel. Rec. 167-6
 710B (Ch. 120146-B) (See Model 695B) 162
 711B, 712B (Ch. 120164-B) Tel. Rec. 183-6
 711F, 712F (Ch. 120169-B) (See Model 711B) (Also See Prod. Chge. Bul. 56-Set 190-1) 183

EMERSON—Cont.

713B (Ch. 120156-B) (See Model 706B) 176
 716D (Ch. 120163-D) Tel. Rec. 190-2
 716F (Ch. 120168-D) Tel. Rec. (See Prod. Chge. Bul. 61-Set 195-1 and Model 716D) (Set 190-2) 190
 717D (Ch. 120163-D) Tel. Rec. (See Model 716D) 190
 717F (Ch. 120168-D) Tel. Rec. (See Prod. Chge. Bul. 61-Set 195-1 and Model 716D-Set 190-2) 191-7
 718B (Ch. 120150-B) 191-7
 719D (Ch. 120163-D) Tel. Rec. (See Model 716D) 190
 719F (Ch. 120168-D) Tel. Rec. (See Prod. Chge. Bul. 61-Set 195-1 and Model 716D-Set 190-2) 190
 720B (Ch. 120164-B) Tel. Rec. (See Model 718B) 183
 720D (Ch. 120169-B) Tel. Rec. (See Model 711B) (Also See Prod. Chge. Bul. 56-Set 190-1) 183
 722D (Ch. 120163-D) Tel. Rec. (See Model 716D) 190
 727D (Ch. 120168-D) Tel. Rec. (See Prod. Chge. Bul. 61-Set 195-1 and Model 716D-Set 190-2) 190
 728D (Ch. 120166-D) Tel. Rec. 197-5
 732B (Ch. 120169-B) Tel. Rec. (See Model 711B) (Also See Prod. Chge. Bul. 56-Set 190-1) 183
 732D (Ch. 120164-B) Tel. Rec. (See Model 711B) 183
 733F (Ch. 120169-F and Radio Ch. 120152-F) Tel. Rec. *
 734B (Ch. 120169-B) Tel. Rec. (See Model 711B) (Also See Prod. Chge. Bul. 56-Set 190-1) 183
 736B (Ch. 120171-B) Tel. Rec. *
 738B (Ch. 120150-B) (See Model 718B-Set 191-7) 741D (Ch. 120168-D) Tel. Rec. (See Model 716F) 16-14
 1002 (See Model 1002) 16
 Ch. 120019 (See Model 527) *
 Ch. 120025B (See Model 585) 61
 Ch. 120025B (See Model 618) *
 Ch. 120047 (See Model 7545) Photostat Servicer 82
 Ch. 120066 (See Model 571) 46
 Ch. 120066B (See Model 571) *
 Ch. 120084B (See Model 609) 90
 Ch. 120086B (See Model 571) 76
 Ch. 120087B-D (See Model 571) 76
 Ch. 120088B (See Model 585) *
 Ch. 120089B (See Model 608A) 84
 Ch. 120090B, C (See Model 585) *
 Ch. 120091D-QD (See Model 571) 76
 Ch. 120092D (See Model 571) 76
 Ch. 120094A (See Model 649A) 106
 Ch. 120095-B (See Model 612D) 95A-3
 Ch. 120096B (See Model 630) 93A-7
 Ch. 120098B (See Model 621) 108
 Ch. 120098P (See Model 621) 108
 Ch. 120099B (See Model 621) 108
 Ch. 120103B (See Model 600) (Also See Prod. Chge. Bul. 9, Set 114-1) 87
 Ch. 120104B, B, J (See Model 608A) 84
 Ch. 120107B (See Model 571) 76
 Ch. 120109 (See Model 631) 93A-6
 Ch. 120110, B, BC, C (See Model 614, B, BC, C) 97
 Ch. 120110E (See Model 614) 97
 Ch. 120113, B, BC, C (See Model 614) 97
 Ch. 120114 (See Model 631) 93A
 Ch. 120114B (See Model 629) 93A-6
 Ch. 120118B (See Model 650) 113
 Ch. 120120 (See Model 629B, C) 119
 Ch. 120123B (See Model 650D) 109
 Ch. 120124 (See Model 629D) 116
 Ch. 120124B (See Model 629D) 116
 Ch. 120124B (See Model 658D) *

EMERSON—Cont.

Ch. 120127-B, 120128-B (See Model 662B, 663B) (Also Prod. Chge. Bul. 18, Set 130-1) 125
 Ch. 120129-B (See Model 669B) (Also See Prod. Chge. Bul. 24, Set 142-1) 126
 Ch. 120131-B (See Model 665B) 146
 Ch. 120133B (See Model 660B) 131
 Ch. 120134B, G, H (See Model 661B) 137
 Ch. 120135B, G, H (See Model 666B) (Also See Prod. Chge. Bul. 27-Set 148-1) 133
 Ch. 120136-B (See Model 653B) 159
 Ch. 120138-B (See Model 650F) 133-1A
 Ch. 120140B (See Model 676B) 128
 Ch. 120141-B (See Model 683B) *
 Ch. 120142B (See Model 676F) 148
 Ch. 120143B, H (See Model 676F) 148
 Ch. 120144-B (See Model 676D) 138
 Ch. 120144G, H (See Model 676D) 138
 Ch. 120148-B (See Model 669B) *
 Ch. 120150-B (See Model 718B) 191
 Ch. 120153-B (See Model 700B, 701B) 169
 Ch. 120154-B (See Model 704) 184
 Ch. 120158-B (See Model 700D, 701D) 166
 Ch. 120160-B (See Model 695D) 165-1A
 Ch. 120162-A (See Model 709A) 167
 Ch. 120163-D (See Model 716F) 190
 Ch. 120164-B (See Model 711B) 183
 Ch. 120166-D (See Model 721D) *
 Ch. 120168-D (See Model 716F) 190
 Ch. 120169-B (See Model 711F) *
 Ch. 120169F (See Model 733F) *
 Ch. 120171-B (See Model 736B) *
EMPRESS 55, 56 7-14
ESPEY (Also see Philharmonic)
 RR13, RR13L 13-17
 7B (See Model 571) 47-8
 7C (See Model 571) 153-4
 18B 90-7
 31 103-9
 511C 174-6
 512 68-8
 512B 182-4
 513, 514 63-8
 524 (See Model 188) 90
 581 14-10
 621 10-17
 641, 642 8-11
 651 9-14
 652, 653 (See Model 651) 9
 751 (See Model 188) 90
 6511, 6511-2, 6511-5, 6514, 6516, 6517, 6520, 6520-2, 6521, 6533, (Ch. FJ97) See model 651 9
 6540, 6541 8-12
 6542 (Ch. FJ97) 9
 (See Model 651) 9
 6545 (Ch. FJ97) 5-16
 6546 (Ch. FJ97) 9
 (See Model 651) 9
 6547 (See Models 6540, 6541) 8
 6560 (Ch. FJ97) 9
 (See Model 651) 9
 6611, 6612, 6613, 6614, 6615, 6630, 6631, 6632, 6634, 6635 (Ch. 97A) 18-16
 7541 (Ch. FJ97) 9
 (See Model 651) 9
 7552 (See Model 188) 90
ESQUIRE
 60-10, 65-4 14-11
 511 157-3
 517 (See Model 520) 163
 520 163-5
 550 177-6
FADA
 DL121 Tel. Rec. 200-5
 G-925 Tel. Rec. 89-6
 P80 27-9
 P82 21-16
 P100 27-10
 P111 178-6
 P130 135-7
 R7C15, R7C25 Tel. Rec. 158-3
 R-1025 Tel. Rec. 114-4
 R-1050 Tel. Rec. *
 (See Model R-1025) 114
 S4C20 Tel. Rec. 142-8
 S4C40 Tel. Rec. *
 (See Model S4C20) 142
 S4T15 Tel. Rec. *
 (See Model S4C20) 142
 S4T30 Tel. Rec. *
 (See Model S4C20) 142
 S6C55 Tel. Rec. 134-7
 S6C70 Tel. Rec. *
 (See Model S6C55) 134
 S6T65 Tel. Rec. *
 (See Model S6C55) 134

FADA—Cont.

57C20, 57C30 Tel. Rec.	134
(See Model 56C55)	134
57C70 Tel. Rec.	134
(See Model 56C55)	134
57T65 Tel. Rec.	134
(See Model 56C55)	134
59C10 Tel. Rec.	134
(See Model 56C55)	134
520720 Tel. Rec. (See Model 56C55)	134
51015 Tel. Rec.	109-4
51020 Tel. Rec. (See Model 51015)	109
51030 Tel. Rec. (See Model 51015)	109
51055, 51055X Tel. Rec. (See Model 56C55)	134
51060 Tel. Rec. (See Model 56C55)	134
51065 Tel. Rec. (See Model 56C55)	134
TV30 Tel. Rec.	74-3
7C42 Tel. Rec.	179-5
7C52 Tel. Rec.	179
(See Model 7C42)	179
7132 Tel. Rec.	177-7
20C22 Tel. Rec.	180-3
20T12 Tel. Rec. (See Model 20C22)	180
21C2 Tel. Rec.	200-5
21T Tel. Rec.	200-5
24T2 Tel. Rec.	200-5
24T10 Tel. Rec. (See Model 20C22)	180
173T, 175C, 177CD Tel. Rec.	192-5
215C Tel. Rec.	200-5
402	14-12
605, 606 Series	1-13
609, 610 Series	1-15
633	17-13
637	17-14
652 Series	1-23
700	32-7
711, 740	28-10
721 Tel. Rec.	177
(See Model 7T32)	177
775T Tel. Rec.	177
(See Model 7T32)	177
790	64-6
795	36-6
799 Tel. Rec. (See Model TV30)	74
830	97-5
845	97-6
855	92-2
890 Tel. Rec. (See Model TV30)	95A-5
899 Tel. Rec. (See Model TV30)	74
925 (See Model G-925)	89
930, 940 Tel. Rec. (See Model TV30)	74
965 (See Model G-925) Tel. Rec.	89
1000 Series	1-17
1001	17-15

FAIRMONT

30T14A-056 Tel. Rec. (Similar to Chassis)	119-3
38T12A-058 Tel. Rec. (Similar to Chassis)	109-1
317T3 Tel. Rec. (Similar to Chassis)	72-4
318T4 Tel. Rec. (Similar to Chassis)	85-3
318T45 Tel. Rec. (Similar to Chassis)	85-3
318T4-872 Tel. Rec. (Similar to Chassis)	85-3
318T6A Tel. Rec. (Similar to Chassis)	85-3
318T6A-950 Tel. Rec. (Similar to Chassis)	85-3
318T9A-900 Tel. Rec. (Similar to Chassis)	78-4
318T6A Tel. Rec. (Similar to Chassis)	85-3
318T9A-918 Tel. Rec. (Similar to Chassis)	78-4
318T10A-916 Tel. Rec. (Similar to Chassis)	78-4
2318T6A-954 Tel. Rec. (Similar to Chassis)	85-3
2318T9A-912 Tel. Rec. (Similar to Chassis)	78-4

FARNSWORTH (Also see Record Changer Listing)

EC-260	7-15
EK-081, EK-082, EK-083	26-13
EK-262, EK-263BL, E-263WL, E-264BL, EK-264WL, EK-265 (See Model EC-260)	7
EK-681 (See Model EK-081)	26
ET-060, ET-061, ET-063	6-11
ET-064, ET-065, ET-066	4-2
GK-100, GK-102	23-8
GK-103, GK-104	23-8
GK-111, GK-112	60-11
GK-114, GK-115	60-11
GK-140, GK-141, GK-142, GK-143, GK-144	24-18
GT-050, GT-051, GT-052, GT-060, GT-061, GT-064, GT-065	35-6
GV220, GV240, GV260 Tel. Rec.	*
K-267, K-669 (See Model EC-260)	7
Ch. 150 (See Model ET-060)	6
Ch. 152, 153 (See Model EC-260)	7
Ch. 156, 157 (See Model EK-081)	26
Ch. 158, 159 (See Model ET-064)	4
Ch. 162 (See Model EC-260)	7
Ch. 170 (See Model GK-100)	23
Ch. 193 (See Model EK-081)	26
Ch. 194, 201, 216 (See Model GK-100)	23

FEDERAL MFG. CO.

104 (Select-A-Call)	18-17
135 (Select-A-Call)	11-7

FEDERAL TEL. & RADIO CORP.

1021 (See Model 1030T)	8
1030T	8-13
1031 1032 (See Model 1030T)	8
1040T, 1040TB	23-9
1540T (See Model 1030T)	8

FERRAR

C-81-B	17-16
T-61B	39-4
WR-11	15-10

FIRESTONE (AIR CHIEF)

4-A-2 (Code No. 297-6-1MMU-143)	14-4
4-A-3 (Code No. 297-6-LMFU-134)	31-13
4-A-10 (Code No. 297-7-RN228)	28-11
4-A-11 (Code No. 188-8-4A11)	41-7
4-A-12 (Code No. 213-8-8370)	49-8
4-A-15 (Code 177-7-4A15)	36-7
4-A-17 (Code No. 217-7270)	35-7
4-A-20 (Code 5-5-9000-A)	15-11
4-A-21 (Code No. 5-5-9001A), 4-A-22X (Code No. 5-5-9001B)	11-19
4-A-23 (5-5-9003-A)	2-29
4-A-24 (Code 291-6-566)	13-5
4-A-25 (Code 291-6-572)	13-6
4-A-26 (Code No. 307-6-9030-A)	33-5
4-A-27	28-12
4-A-30	*
4-A-31 (Code No. 177-5-4A31)	11-20
4-A-37 (Code 177-5-4A37)	13-7
4-A-40	*
4-A-41 (Code 291-7-576)	52-8
4-A-42 (Code No. 177-7-4A42)	30-9
4-A-43 (Code No. 307-8-9047A)	38-6
4-A-61 (Code No. 332-8-137J2T)	48-7
4-A-62, 4-A-63	67-10
4-A-64, 4-A-65	68-9
4-A-66 (Code No. 177-8-4A66)	74-4
4-A-68 (Code No. 332-8-143653)	53-11
4-A-69 (Code No. 155-8-85)	61-8
4-A-70	136-8
4-A-71 (Code 291-8-628)	59-9
4-A-78, 4-A-79	117-5
4-A-85	118-7
4-A-86	129-6
4-A-86 (Late)	144-4
4-A-87	119-7
4-A-88	132-6
4-A-89	*
(See Model 4-A-85)	118
4-A-92	154-4
4-A-95 (See Model 4-A-86 Late)	144
4-A-96 (See Model 4-A-87)	119
4-A-97, 4-A-98	147-5
4-A-101, 4-A-102	181-6
4-A-108 (Code 297-2-361)	191-8
4-A-112 (See Model 4-A-92—Set 154-4)	7-1
4-B-1 (Code 7-6-PM15)	7-1
4-B-2 (Code 7-6-PM14)	18-18
4-B-6 (Code No. 177-7-PM18)	29-8
4-B-31	*
4-B-56	133-6
4-B-57	124-4
4-B-58	135-8
4-B-60	153-5
4-B-61	155-6
4-B-62	152-6
4-B-67 (Code 120-2-F152)	187-6
4-C-1	*
4-C-3	19-17
4-C-5 (Code 291-7-574)	33-6

FIRESTONE—Cont.

4-C-6 (See Model 4C3)	19
4-C-13 (Code 332-8-140623)	66-9
4-C-16, 4-C-17	120-6
4-C-18	110-8
4-C-19, 4-C-20	170-7
4-C-21 (Code 120-2-C51-U)	185-7
13-G-3 Tel. Rec.	86-5
13-G-4 (Code 347-9-249B) Tel. Rec.	73-5
13-G-5 (Code 291-9-651) Tel. Rec.	83-3
13-G-33 Tel. Rec.	108-6
13-G-44, 13-G-45 Tel. Rec.	*
13-G-46, 13-G-47 Tel. Rec.	140-5
13-G-48 Tel. Rec.	143-6
13-G-49, 13-G-50 Tel. Rec.	*
13-G-51, 13-G-52 (Code 307-1-9202A, AA, B, BA) Tel. Rec.	193-4
13-G-53, 13-G-54, 13-G-55 Tel. Rec.	*
13-G-56 Tel. Rec.	152-7
13-G-57 Tel. Rec.	158-4
13-G-58, 13-G-59 Tel. Rec.	*
13-G-79 Tel. Rec.	*
13-G-107, 13-G-108 (Code 105-2-700140) Tel. Rec.	197-6
13-G-109, A (Code 105-2-700100, 105-2-700104) Tel. Rec.	197-6
13-G-110 (Code 334-2-MS29A) Tel. Rec.	180-4
13-G-110A (Code 334-2-MS31CA) Tel. Rec. (Also see Prod. Chge. Bul. 60—Set 194-1)	182
13-G-114, A (Code 105-2-8170) (Ch. 817) Tel. Rec.	198-6
13-G-115, 13-G-116 (Code 334-2-MS31CA) Tel. Rec. (See Model 13-G-110A) (Also see Prod. Chge. Bul. 60—Set 194-1)	182
13-G-117 (Code 105-2-8170) (Ch. 817) Tel. Rec. (See Model 13-G-114)	198-6
13-G-119, 13-GG-120 (Code 334-2-MS31CA) Tel. Rec. (See Model 13-G-110A) (Also see Prod. Chge. Bul. 60—Set 194-1)	182
13-G-122 (Code 105-2-700140) Tel. Rec.	197-6
13-G-124 (Code 105-2-82000) Tel. Rec. (See Model 13-G-107—Set 197-6)	182
13-G-125 (Code 105-2-81700) Tel. Rec. (See Model 13-G-107—Set 197-6)	182

FLUSH WALL

5P	26-14
----	-------

FORD

CF890, E (OA-18805-B)	109-5
M-1 (8A-18805-A1)	46-4
M-1A (OA-18805-A1) (See Model M-1)	46
M-1A-1 (OA-18805-A1)	106-8
M-2 (1A-18805-A1)	132-7
M-4 (FAC-18805-A1)	184-7
0BF (OA-18805-A1) (See Model M-1A-1)	106
OCF751-1 (1A-18805-D)	157-4
OMF (OA-18805-A2) (See Model CF900)	135-9
OZF (OA-18805-B) (See Model CF900)	109
1BF (1A-18805-A1) (See Model M-2)	132
2BF (FAC-18805-A1) (See Model M-4)	184
1CF743 (1A-18805-B)	133-7
1CF743-1 (1A-18805-B)	158-5

FORD—Cont.

1CF751-2 (1A-18805-G) (See Model OCF751-1)	157
1MF (1A-18805-A2)	131-8
2MF (FAC-18805-A)	175-10
2CF754 (FAC-18805-B)	167-7
6MF080 (51A-18805-A1 Ch. 6CA1)	10-18
6MF780 (51A-18805-A1)	62-12
6MF780-E (51AF-18805) (See Model 6MF780)	62
8MF880 (8A-18805-B)	42-12
8MF881 (8C-18805B)	47-9
8MF980 (8A-18805B)	61-9
8MF983 (8A-18805B-1)	*
8MF983-E (8A-18805)	83-4
8ZT (8A-18805-B) (See Model 8MF881)	47
9BF (8A-18805-A1) (See Model M-1)	46
9DF (8A-18805-A2) (See Model 8072)	44
9MF (8A-18805-A3) (See Model 8072)	44
9ZF (8A-18805-B1)	44
8MF980 (8MF983)	83
7070 (51A-18805-B2)	45-10
8072 (8A-18805-A)	44-4

FREED EISEMAN

46	55-68 (Ch. 1620C) Tel. Rec.	113-1A
101, 102, 103, 104 (Ch. 1916-16, 1916-19)	*	

GALVIN (See Motorola)

GAMBLE-SKOGMO (See Coronado)

GAROD (Also See MAJESTIC)

4A-1, 4A-2	29-9
4B-1	51-6
5A-1	22-15
5A-2	5-28
5A-3	44-5
5A-4	40-6
5AP1-Y "The Companion"	15-12
5D, 5D-2	12-12
5D-3, 5D-3A	22-16
5D-4, 5D-5	33-7
5RC-1	36-8
6A-2	28-13
6AU-1	5-29
6BU-1A "The Senator"	13-18
6DPS, 6DPS-A	12-13
10T21, 10T22, 10T23	60-12
10T24, 10T25 Tel. Rec.	60
10T220, 10T221, 10T222, 10T223 Tel. Rec.	95A-4
11FAP	38-7
12T21, 12T22, 12T23, 12T24, 12T25, 12T26A, 12T27A, 15T26, 15T27 Tel. Rec. (See Model 10T21)	60
12T220, 12T221, 12T222, 12T223 Tel. Rec. (See Model 10T220)	95A
15T224, 15T225, 15T226, 15T227 Tel. Rec.	95A-4
628	29-10
306	48-8
900, 1000 Series Tel. Rec.	50-7
1100 Series Tel. Rec. (See Model 900)	50
1200 Series Tel. Rec. (See Model 900)	50
3912 TVFMP, 3915 TVFMP Tel. Rec.	95A-6

GARRARD (See Record Changer Listing)

GENERAL (Mutual Buying Syndicate)

17CG1, 17TW Tel. Rec. (Similar to Chassis)	149-13
--	--------

GENERAL ELECTRIC (Also see Record Changer Listing)

YRB-60-1, YRB-60-2, YRB-60-3	33-8
10C101, 10C102 Tel. Rec.	96-4
10T1 Tel. Rec. (See Model 10C101)	96
10T4, 10T5, 10T6 Tel. Rec. (See Model 10C101)	96
12C101, 12C102, 12C105 Tel. Rec. (See Model 10C101)	96
12C107, 12C107B, 12C108, 12C108B, 12C109, 12C109B Tel. Rec. (See Model 12K1 Tel. Rec.)	125-7
12K1 Tel. Rec.	95A-6
12T1 Tel. Rec. (See Model 10C101)	96
12T3, 12T3B, 12T4, 12T4B Tel. Rec. (See Model 12C107)	125
12T7 Tel. Rec.	99A-5
14	35-8
14C102, 14C103 Tel. Rec.	123-4
14T2, 14T3 Tel. Rec. (See Model 14C102)	123
16C112 Tel. Rec. (See Model 14C102)	123
16C110, 16C111 Tel. Rec. (See Model 14C102)	123
16C113 Tel. Rec. (See Model 14C102)	123
16E-15, 16C116, 16C117 Tel. Rec. (See Model 14C102)	123
16K1, 16K2 Tel. Rec.	161-1A
16T1, 16T2, 16T3, 16T4, 16T5 Tel. Rec. (See Model 14C102)	123
17C101, 17C102 Tel. Rec. (See Model 14C102)	123
17C103, 17C104, 17C105 Tel. Rec. (Also see Prod. Chge. Bul. 32—Set 158-1)	141-6
17C107, 17C108, 17C109 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C110, 17C111 (Early, "D" & "W" Versions) Tel. Rec.	180-5
17C112 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C113 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C114 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C115 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C116 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C117 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C118 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C119 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C120 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C121 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C122 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C123 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C124 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C125 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C126 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C127 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C128 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C129 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C130 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C131 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C132 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C133 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C134 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C135 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C136 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C137 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C138 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C139 Tel. Rec. (See Model 17C103) (Also see Prod. Chge. Bul. 32—Set 158-1)	141
17C1	

GENERAL ELECTRIC—HOFFMAN

GENERAL ELECTRIC—Cont.

321 3—26
 324 64—7
 326, 327 30—11
 328 (See Model 324) 64
 329, 330 (See Model 324) 64
 354, 355 33—9
 356, 357, 358 37—6
 376, 377, 378 45—11
 400, 401 118—8
 404, 405 121—6
 408 116—6
 410 176—4
 409 (See Model 404) 121
 411 (See Model 400) 118
 412 189—9
 414, 415, 416 175—11
 417 16—15
 422, 423 154—5
 430 (See Model 414) 175
 500, 501 (See Model 64) 98
 502 35—9
 505, 506, 507, 508, 509
 (See Model 64) 98
 510, 511 120—7
 510F, 511F, 512F, 513F 143—7
 514 198—7
 515F, 516F, 517F, 518F
 (See Model 510F) 143
 521, 522 114—5
 521F, 522F
 (See Model 510F) 143
 530 (See Model 64) 98
 535 151—7
 542, 543 198—7
 546, 547, 548, 549 191—9
 600 109—6
 601, 603, 604 115—3
 605, 606 145—6
 607, 608 (See Model 605) 145
 610, 611 147—6
 614, 615 199—6
 650 101—3
 74 157—6
 752, 753 123—5
 754 167—8
 755 130—6
 756 (See Model 754) 167
 757 (See Model 755) 130
 800A, B, C, D Tel. Rec. 78
 801 Tel. Rec. (See Model 805) 78
 801 Tel. Rec. (Photofact Servicer) 78
 802 Tel. Rec. 91A-7
 803 Tel. Rec. 97A-4
 805, 806, 807, 809
 Series Tel. Rec. 78—7
 810 Tel. Receiver 53—12
 811 Tel. Receiver 63—9
 814 Tel. Rec. 69—9
 815 Tel. Rec. 97A-5
 817 Tel. Rec. 78
 (See Model 805) 78
 818 Tel. Rec. 95A-7
 820 Tel. Rec. 78
 821 Tel. Rec. 81—9
 (See Model 805) 78
 830 Early, Tel. Rec. 81—9
 835 Early, Tel. Rec. 81
 (See Model 830 Early) 81
 840 Tel. Rec. 97A-5
 (See Model 830 Early) 81
 901 Tel. Rec. (See Model 901) 97A
 910 Tel. Rec. (See Model 901) 97A
GENERAL IMPLEMENT 37—7
GENERAL INDUSTRIES (See Changer and Recorder Listings)
GENERAL INSTRUMENT (See Record Changer Listing)
GENERAL MOTORS CORP. (GMC)
 2233029 93—6
GENERAL TELEVISION
 1A5, 2A5, 3A5, 5A5
 (Ch. 1-1) 1—21
 485 27—11
 585G, 585Y 27—12
 9A5 39—6
 989P 36—10
 14A4F 3—21
 15A5 (Ch. 1-1) (See Models 1A5, 2A5, 3A5, 5A5) 1
 17A5 5—22
 19A5 (Ch. 1-1) (See Models 1A5, 2A5, 3A5, 5A5) 1
 21A4 12—14
 22A5C 13—19
 23A6 14—4
 2486 37—8
 2585 26—15
 2685 29—11
 27C5 36—11
GILFILLAN
 56A, 56B 1—27
 56BC1, 56BCR, 56C, 56D, 56E (See Model 56A) 1
 58M, 58W 45—12
 66A, 66AM 8—16
 66B "The Overland" 8—17
 66D, 66DM (See Model 66A) 8
 66P, 66PM "The El Dorado" 9—15
 688-D 46—10
 68F 46—11
 68-48 61—10
 86C, 86P, 86U (86 Series) 26—16
 108-48 59—10
GLOBE
 58P1 18—20
 6AP1 (See Model 6P1) 20
 6D1 20—13
 6P1 20—12
 6U1 (See Model 6D1) 20
 7CP-1 28—14
 51 19—18
 62C 19—19

GLOBE—Cont.

85 49—9
 454 41—9
 456 40—7
 457 39—7
 500 21—18
 517 21—17
 551 16—16
 552 27—13
 553 28—15
 559 50—8
GODFREY
 6AD 28—16
 65M 28—17
GON-SET
 3-30 Meter Converter 61—11
 10-11 Meter Converter 37—9
B. F. GODRICH (Also See Mantola)
 92-523, 92-524, 92-525, 92-526, 92-527, 92-528 148—7
GOODELL
 ATB-3 70—5
 NSA-20 73—6
W. T. GRANT (See Grantline)
GRANTLINE
 300 (Series B) 9—16
 500, 501 (Series A) 9—17
 501.7 35—10
 504.7 21—19
 508.7 34—8
 510-A 24—19
 605, 606 12—15
 641 11—9
 651 35—11
 6510 11—10
 6547 11—10
GROMMES
 Lj-2 194—3
 5JPG, 51PG 143—6
 100BA 189—10
 117PS, 210PA 190—3
 205PA 191—10
 215BA 198—8
HALLICRAFTERS (Also See Echophone)
 CA-2, CA-2A 30—12
 CA-4 36—13
 S-38 3—7
 S-38B 121—7
 S-38C (Run 2) 2—19
 S-44 33—10
 S-40A 122—4
 S-40B 10—19
 S-41G, S-41W 46—12
 S-47 40—8
 S-52 48—9
 S-53 39—8
 S53A, AU 171—5
 S-55, S-56 55—9
 S-58 57—8
 S-59 58—10
 S-72 82—6
 S-72L 173—6
 S-76, S-76U 143—9
 S-77 146—7
 S78 124—5
 S-78A (Run 1) 180—6
 S-80 162—6
 S-81 166—11
 S-82 167—9
 ST-74 125—8
 SX-42 44—6
 SX-43 45—17
 SX-62 61—12
 SX-71 111—6
 T-54 Tel. Receiver 48—10
 T-54 (Late) Tel. Rec. 91—6
 T-60 Tel. Receiver 63—10
 T-61 T-64, T-67 Tel. Rec. (Also see Prod. Chge. Bul. 32—Set 158-1) 65—7
 T-68 (Tel. Rec.) (See Model T-60) 63
 T-69 Tel. Rec. 130—7
 5R10A 155—7
 5R11, 5R12, 5R13, 5R14 129—7
 5R18, 5R19, 5R20, 5R21, 5R22 (See Model 5R11) 129—7
 5R24 168—7
 5R30, A, 5R31, A, 5R32, A, 5R33, A, 5R34, A 170—8
 5R50, 5R51, 5R52 179—6
 8R40, 8R40C 181—7
 400, 406, 409, 410, 411, 412 52—9
 505, 506 Tel. Rec. (See Model T-54) 48
 505, 506 (Late) (See Model T-54) 91
 509, 510 Tel. Rec. (See Model T61) (Also see Prod. Chge. Bul. 32—Set 158-1) 65
 511 Tel. Rec. 96—5
 512C, 513 Tel. Rec. 80—7
 514 Tel. Rec. (See Model T-54) 91
 515 Tel. Rec. (See Model 512C) 80
 518, 519, 520 Tel. Rec. 92—3
 520E Tel. Rec. (See Model 512C) 80
 521 Tel. Rec. (See Model 518) 92
 521E Tel. Rec. (See Model 512C) 80
 524 Tel. Rec. (See Model 512C) 80
 600, 601, 602, 603, 604 Tel. Rec. (See Model 518) 92
 605, 606 Tel. Rec. 107—5
 680, 681 Tel. Rec. 113—3
 690 Tel. Rec. (See Model 680) 113

HALLICRAFTERS—Cont.

715, A, 716 Tel. Rec. (See Model 680) 113
 730, 731 (Run 1) Tel. Rec. (See Model 680) 113
 732, 733 Tel. Rec. 117
 740, 741 (Run 1) Tel. Rec. (See Model 680) 113
 745 Tel. Rec. 105—4
 750, 751, Tel. Rec. (See Model 745) 105
 760, 761 Tel. Rec. (See Model 745) 105
 805, 806 Tel. Rec. 136—9
 810 Tel. Rec. (See Model 805) 136
 810A, 811 Tel. Rec. 124—6
 815 Tel. Rec. (See Model 810A) 124
 818, 820, 822 Tel. Rec. (See Model 810A) 124
 821 Tel. Rec. (See Model 810A) 124
 832, 833 Tel. Rec. 121—1A
 860, 861 Tel. Rec. (See Model 810A) 124
 870, 871 Tel. Rec. (See Model 810A) 124
 880 Tel. Rec. (See Model 810A) 124
 1000 (Ch. W1000D) 180—7
 1001, 1002, 1003, 1004 (Ch. F1000D) Tel. Rec. 169—7
 1005, 1006 (Ch. A1100D) Tel. Rec. 177—8
 1007 (Ch. F1100D) Tel. Rec. (See Model 1002) 169
 1008 (Ch. X1000D) Tel. Rec. (See Model 1000) 180
 1010P (Ch. A-1200D, K1200D, W1200D) Tel. Rec. 188—6
 1012P (Ch. A-1200D, K1200D, W1200D) Tel. Rec. (See Model 1010P) 188
 1013C (Ch. F1200D) Tel. Rec. (See Model 1010P) 188
 1015, 1016, 1017, 1018, 1019 (Ch. A1000D) Tel. Rec. (See Model 1005) 177
 1019 (Ch. Z1000D) Tel. Rec. (See Model 1000) 180
 1021P (Ch. D1200D, L1200D, X1200D) Tel. Rec. (See Model 1010P) 188
 1022C (Ch. G1200D) Tel. Rec. (See Model 1010P) 188
 1025 (Ch. C1000D) Tel. Rec. 172—4
 1026 (Ch. D1200D, L1200D, X1200D) Tel. Rec. (See Model 1010P) 188
 1027C (Ch. G1200D) Tel. Rec. (See Model 1010P) 188
 1111P (Ch. A1200D) Tel. Rec. (See Model 1010P) 188
 1113P (Ch. D1200D, L1200D, X1200D) Tel. Rec. (See Model 1010P) 188
 14808 (Ch. R900D) Tel. Rec. 167—10
 17804C Tel. Rec. 155—8
 1781C Tel. Rec. 152—9
 17810M Tel. Rec. 156—6
 17811-H Tel. Rec. 156—6
 17812, 17813, 17814, 17815-H Tel. Rec. (See Model 17804C) 155
 17816, 17817 Tel. Rec. (See Model 17811-H) 156
 17819 Tel. Rec. (See Model 17804C) 155
 17824 Tel. Rec. (See Model 17804C) 155
 17824A, 17824B, 17824C, 17829 (Ch. F1100D) Tel. Rec. (See Model 1002) 169
 17838 Tel. Rec. (See Model 17804C) 155
 17848, 17849, 17850 Tel. Rec. (See Model 17804C) 155
 17860-H, 17861-H Tel. Rec. (See Model 17811-H) 156
 17905 Tel. Rec. (See Model 17810-M) 152
 17906 Tel. Rec. (See Model 17824A) 165
 17930, 17931, 17932, 17933, 17934 Tel. Rec. (See Model 17824A) 165
 20823 (Ch. M900D) Tel. Rec. (See Model 14808) 167
 20823B (Ch. L900D) Tel. Rec. (See Model 14808) 167
 20823C Tel. Rec. (See Model 17824A) 165
 20872 Tel. Rec. (See Model 17804C) 155
 20990, 20990S, 20994 Tel. Rec. 154—6
 21923 Tel. Rec. (See Model 17824A) 165
 21928 Tel. Rec. (See Model 17824A) 165
 21940 Tel. Rec. (See Model 17824A) 165
 21982 Tel. Rec. (See Model 17824A) 165
 Ch. W1000D (See Model 1000) 180
 Ch. X1000D (See Model 1000) 180
 Ch. Y1000D (See Model 1000) 180
 Ch. A1100D (See Model 1005) 177
 Ch. A1200D (See Model 1010P) 188
 Ch. D1200D (See Model 1010P) 188
 Ch. F1200D (See Model 1010P) 188
 Ch. G1200D (See Model 1010P) 188

HALLICRAFTERS—Cont.

Ch. K1200D (See Model 1010P) 188
 Ch. L1200D (See Model 1010P) 188
 Ch. W1200D (See Model 1010P) 188
 Ch. X1200D (See Model 1010P) 188
HAMILTON ELECTRONICS
 H-15-S 16—17
 H-50-2S 16—18
HAMILTON RADIO CORP. (See Olympic)
HAMMARLUND
 HQ-129-X 8—18
 SP-400-X 10—20
HARVEY-WELLS
 AT-38-6, AT-38-12 32—11
 ATR-3-6, ATR-3-12 36—14
HEATH
 HBR-5 24—20
HOFFMAN
 A-200 (Ch. 103) 4—23
 A-202 (Ch. 119) 11—11
 A-300 4—41
 A-300 (Ch. 119) 11
 (See Model A-202) 11—12
 A-401 (Ch. 102) 4—34
 A-500 (Ch. 107) 3—35
 A-501 (Ch. 108ST) 12—16
 A-700 (Ch. 110S) 17—17
 B-1000 48—11
 C-501 51—9
 C-502 50—9
 C-503 (Ch. 123) 47—10
 C-506, C-507 49—10
 C-509, C510 48
 C-511 (See Model C-501) 48
 C-512 (See Model C-502) 51
 C-513 (See Model C-503) 50
 C-514 (See Model C-504) 47
 C-518 61—13
 C710 (Ch. 133) 54—9
 C1006, C1007 63—11
 CT-800, CT-801, CT-900, CT-901 (Tel. Rec.) 63—11
 7B104 (Ch. 190) Tel. Rec. 194—4
 7B110 (Ch. 200) Tel. Rec. 194—4
 7B110B (Ch. 210, M) Tel. Rec. 194—4
 7B113 (Ch. 202) Tel. Rec. 194—4
 7B113B (Ch. 212, M) Tel. Rec. 194—4
 7B303 (Ch. 190) Tel. Rec. 168
 7A103 (Ch. 190) Tel. Rec. 168
 7M109 (Ch. 200) Tel. Rec. 168
 7M109B (Ch. 210, M) Tel. Rec. 168
 7M112 (Ch. 202) Tel. Rec. 168
 7M112B (Ch. 212, M) Tel. Rec. 168
 (See Model 7B113B) 194
 7M302 (Ch. 190) Tel. Rec. 168
 7P105 (Ch. 190) Tel. Rec. 168
 7P111 (Ch. 200) Tel. Rec. 168
 7P111B (Ch. 210, M) Tel. Rec. 168
 7P114B (Ch. 212, M) Tel. Rec. 168
 (See Model 7B113B) 194
 7P304 (Ch. 190) Tel. Rec. 168
 20B102 (Ch. 183T) Tel. Rec. 168—8
 20B102F (Ch. 194) Tel. Rec. 168—8
 20B501 (Ch. 183T) Tel. Rec. (See Model 20B102) 168
 20M101 (Ch. 183T) Tel. Rec. (See Model 20B102) 168
 20M101F (Ch. 194) Tel. Rec. 168
 20M500, 20P502 (Ch. 183T) Tel. Rec. (See Model 636B) 168
 21B107 (Ch. 191) Tel. Rec. 195—8
 21B176 (Ch. 196, M) Tel. Rec. 195—8
 21B122 (Ch. 211, M) Tel. Rec. (See Model 7B113B) 194
 21B301 (Ch. 191) Tel. Rec. 195—8
 21B306B (Ch. 211, M) Tel. Rec. (See Model 7B113B) 194
 21B309 (Ch. 196M, T) Tel. Rec. 195—8
 21B504 (Ch. 191) Tel. Rec. 195—8
 21B507 (Ch. 211, M) Tel. Rec. (See Model 7B113B) 194
 21B701 (Ch. 191) Tel. Rec. 195—8
 21B701 (Ch. 192 and Radio Ch. 182) Tel. Rec. 195—8
 21B904 (Ch. 213, M) Tel. Rec. 195—8
 21M106 (Ch. 191) Tel. Rec. 195—8
 21M115 (Ch. 196, M) Tel. Rec. 195—8
 21M121 (Ch. 211, M) Tel. Rec. (See Model 7B113B) 194
 21M300 (Ch. 191) Tel. Rec. 195—8
 21M305 (Ch. 201) Tel. Rec. 195—8
 21M305B (Ch. 211, M) Tel. Rec. (See Model 7B113B) 194
 21M308 (Ch. 196M, T) Tel. Rec. 195—8
 21M503 (Ch. 191) Tel. Rec. 195—8
 21M506 (Ch. 211, M) Tel. Rec. (See Model 7B113B) 194

HOFFMAN—Cont.

21M700 (Ch. 191) Tel. Rec. 195—8
 21M700 (Ch. 196M, T) Tel. Rec. 195—8
 21M902 (Ch. 192 and Radio Ch. 182) Tel. Rec. 195—8
 21M903 (Ch. 213, M) Tel. Rec. 195—8
 21P108 (Ch. 191) Tel. Rec. 195—8
 21P117 (Ch. 196, M) Tel. Rec. 195—8
 21P123 (Ch. 211, M) Tel. Rec. (See Model 7B113B) 194
 21P307B (Ch. 211, M) Tel. Rec. (See Model 7B113B) 194
 21P310 (Ch. 196M, T) Tel. Rec. 195—8
 21P505 (Ch. 191) Tel. Rec. 195—8
 21P508 (Ch. 211, M) Tel. Rec. (See Model 7B113B) 194
 21P702 (Ch. 196M, T) Tel. Rec. 195—8
 21P905 (Ch. 192 and Radio Ch. 182) Tel. Rec. 195—8
 21P905 (Ch. 213, M) Tel. Rec. 195—8
 24B707 (Ch. 187, B, C) Tel. Rec. (See Model 24B7) 159
 522, 527 (Ch. 138) 97A
 600, 601 (Ch. 154, 155) Tel. Rec. 95A-8
 610 (Ch. 140) Tel. Rec. 97A-6
 612 (Ch. 142) Tel. Rec. 97A
 613 (Ch. 149) Tel. Rec. (See Model 610) 97A
 630, 631 (Ch. 159) Tel. Rec. 150—7
 630, 631 (Ch. 170) Tel. Rec. 150—7
 632, 633 (Ch. 160) Tel. Rec. 150—7
 632, 633, 634, 635 (Ch. 171) Tel. Rec. (See Model 630) 150
 634A, 635A (Ch. 173) Tel. Rec. (See Model 630) 150
 636, 637 (Ch. 183) Tel. Rec. 141—7
 636B, 637B (Ch. 183 B) Tel. Rec. 168
 (See Model 20B102) 168
 638, 639 (Ch. 180) Tel. Rec. 144—5
 816, 817 (Ch. 145) Tel. Rec. 95A-8
 820, 821, 822 (Ch. 146) Tel. Rec. 95A-8
 826, 827, 828 (Ch. 143) Tel. Rec. 95A-8
 830, 831 (Ch. 151) Tel. Rec. 97A-6
 832 (Ch. 151) Tel. Rec. (See Model 830) 97A-6
 836, 837 (Ch. 153) Tel. Rec. 93A-8
 840 (Ch. 153) Tel. Rec. (See Model 836) 93A
 846 (Ch. 151) Tel. Rec. (See Model 830) 97A
 847, 848, 849 (Ch. 156) Tel. Rec. 97A-7
 860, 861, 862 (Ch. 157) Tel. Rec. (See Model 860) 97A
 866, A, 867, A, 868, A (Ch. 173) Tel. Rec. (See Model 630) 150
 870, 871, 872 (Ch. 170) Tel. Rec. (See Model 630) 150
 876, 877, 878 (Ch. 171) Tel. Rec. (See Model 630) 150
 876A, 877A, 878A (Ch. 173) Tel. Rec. (See Model 630) 150
 880, 881, 882, 883, 884, 885, 886, 887 (Ch. 183) Tel. Rec. (See Model 636) 141
 886B, 887B (Ch. 183B) Tel. Rec. (See Model 20B102) 168
 890, 891, 892 (Ch. 175) Tel. Rec. (See Model 630) 150
 893, 894, 895, 896, 897 (Ch. 185) Tel. Rec. (See Model 636) 141
 896B, 897B (Ch. 183T) Tel. Rec. (See Model 20B102) 168
 902 (Ch. 141, Radio Ch. 137) Tel. Rec. 97A
 912, 913 (Ch. 147) Tel. Rec. (See Model 826) 95A
 914, 915 (Ch. 150) Tel. Rec. (See Model 610) 97A
 917, 918 (Ch. 152) Tel. Rec. (See Model 830) 97A
 920 (Ch. 152) Tel. Rec. (See Model 830) 97A
 946, 947, 948 (Ch. 164) Tel. Rec. (See Model 847) 97A
 950, 951, 952 (Ch. 172), 950A, 951A, 952A (Ch. 174) Tel. Rec. 127—6
 953, 954, 955 (Ch. 184) Tel. Rec. (See Model 636) 141
 960, 961, 962 (Ch. 176) Tel. Rec. (See Model 950) 127

HOFFMAN—Cont.

963, 964, 965 (Ch. 186) Tel. Rec. (See Model 636)..... 141
 Ch. 102 (See Model A401)..... 11
 Ch. 103 (See Model A200)..... 4
 Ch. 107 (See Model A500)..... 11
 Ch. 108ST (See Model A501)..... 3
 Ch. 1105 (See Model A700)..... 12
 Ch. 1119 (See Model B1000)..... 20
 Ch. 123 (See Model A202)..... 11
 Ch. 123 (See Model C504)..... 47
 Ch. 138 (See Models 912, 913)..... *
 Ch. 140 (See Model 610) 97A
 Ch. 141 (Radio Ch. 137) (See Model 902)..... *
 Ch. 142 (See Model 612) 97A
 Ch. 143 (See Model 826) 95A
 Ch. 145 (See Models 816, 817)..... *
 Ch. 146 (See Model 820)..... *
 Ch. 147 (See Model 826) 95A
 Ch. 149 (See Model 613) 97A
 Ch. 150 (See Model 914) 97A
 Ch. 151 (See Model 830) 97A
 Ch. 152 (See Model 917) 97A
 Ch. 153 (See Model 836) 93A
 Ch. 154 (See Model 600) 95A
 Ch. 155 (See Model 600) 95A
 Ch. 156 (See Model 847)..... *
 Ch. 157 (See Model 860) 97A
 Ch. 164 (See Model 946)..... 97A
 Ch. 170, 171 (See Model 630)..... 150
 Ch. 172 (See Model 950) 127
 Ch. 173 (See Model 630) 150
 Ch. 174 (See Model 950) 127
 Ch. 175 (See Model 630) 150
 Ch. 176 (See Model 950) 127
 Ch. 183 (See Model 636)..... 141
 Ch. 183B, 183M, 183T (See Model 636B)..... *
 Ch. 187, B, C (See Model 248707)..... 159
 Ch. 190, B..... *
 Ch. 191..... *
 Ch. 192, B..... *
 Ch. 194..... *
 Ch. 196, M, T (See Model 218116)..... *
 Ch. 200..... *
 Ch. 201..... *
 Ch. 202..... *
 Ch. 211, M (See Model 218122)..... *
 Ch. 212, M (See Model 781138)..... *
 Ch. 213, M..... *
HOWARD
 472AC, 472AF..... 31-14
 472C, 472F..... 32-12
 474 475TV Tel. Rec. 84
 Photofax Servicer..... 84
 481B, 481C, 481M..... 67-11
 482, 482A..... 48-12
 901A-E, 901A-H, 901A-I, 901A-M, 901A-W (See 901A Series)..... 1
 901A Series..... 1-8
 901AP..... 19-21
 902..... *
 906, 906C..... 17-18
 909M..... 25-15
 920..... 5-7
HUDSON (Auto Radio)
 DB47 (Fact. No. 6MH089) 25-16
 DB48 (Fact. No. 6MH889) 39-9
 225908..... 149-6
 225908 (Late) (Ch. 749-1)..... 167-11
 229403 (Ch. 749-2) (See Model 225908 "Late") 167
HUDSON (Dept. Stores)
 30714A-056 Tel. Rec. (Similar to Chassis)..... 119-3
 38712A-058 Tel. Rec. (Similar to Chassis)..... 109-1
 31713 Tel. Rec. (Similar to Chassis)..... 72-4
 31874 Tel. Rec. (Similar to Chassis)..... 85-3
 31874S Tel. Rec. (Similar to Chassis)..... 85-3
 31874-872 Tel. Rec. (Similar to Chassis)..... 85-3
 31876A Tel. Rec. (Similar to Chassis)..... 85-3
 31876A-950 Tel. Rec. (Similar to Chassis)..... 85-3
 31879A-900 Tel. Rec. (Similar to Chassis)..... 78-4
 321MS31C-A Tel. Rec. (Similar to Chassis)..... 182-5
 51876A Tel. Rec. (Similar to Chassis)..... 85-3
 51879A-918 Tel. Rec. (Similar to Chassis)..... 78-4
 518710A-916 Tel. Rec. (Similar to Chassis)..... 78-4
 2318T6A-954 Tel. Rec. (Similar to Chassis)..... 85-3
 2318T9A-912 Tel. Rec. (Similar to Chassis)..... 78-4
HUDSON ELECTRONICS
 RPM-71..... 186-6
 3W..... 191-11
 39HB..... 194-6
 310R..... 186-7
 310R..... 190-5
 312H (See Model 11)..... 194
 324H..... 198-9
 332-H..... 123-6
 347BL..... 121-8
 350..... 126-6
 374H..... 188-7
 388..... 191-12

HYDE PARK

AR14 Tel. Rec. 169-8
 AR17 Tel. Rec. 169
 (See Model AR14L)..... 169
 MST12, MST14 Tel. Rec. 168-9
 14TR, 16TR Tel. Rec. (See Model MST12)..... 168
 17CD (1st Prod.) Tel. Rec. (See Model MST12)..... 168
 17CD (2nd Prod.) Tel. Rec. (See Model AR14L)..... 169
 17CRR (1st Prod.) Tel. Rec. (See Model MST12)..... 168
 17CRR (2nd Prod.) Tel. Rec. (See Model AR14L)..... 169
 17ROC (1st Prod.) Tel. Rec. (See Model MST12)..... 168
 17ROC (2nd Prod.) Tel. Rec. (See Model AR14L)..... 169
 20CD (1st Prod.) Tel. Rec. (See Model MST12)..... 168
 20CD (2nd Prod.) Tel. Rec. (See Model AR14L)..... 169
 20TR Tel. Rec. (See Model MST12)..... 168
 112X Tel. Rec. (See Model MST12)..... 168
 203D (1st Prod.) Tel. Rec. (See Model MST12)..... 168
 203D (2nd Prod.) Tel. Rec. (See Model AR14L)..... 169
 312 Tel. Rec. (See Model MST12)..... 168
 819 Tel. Rec. (See Model MST12)..... 168
 1000, 1001 Tel. Rec. (See Model AR14L)..... 169
 3163CR Tel. Rec. (See Model MST12)..... 168
 8163CR Tel. Rec. (See Model MST12)..... 168
 8193CM Tel. Rec. (See Model MST12)..... 168
INDUSTRIAL ELECTRONIC CORP. (See Simplon)
 (Similar to Chassis)..... 85-3
INDUSTRIAL TELEVISION (Also See Century)
 IT-40R, IT-42R (Ch. IT-26R, IT-35R, IT-39R, IT-46R) Tel. Rec. 99A-7
 IT-48R Tel. Rec. *
INTERNATIONAL ELECTRONICS (See Recorder Listing)
INTERNATIONAL TELEVISION CORP.
 E-16 Tel. Rec. *
 F-16 Tel. Rec. *
JACKSON
 DP-51..... 156-7
 JP-20..... 173-7
 JP-30..... 153-7
 JP-50..... 155-9
 JP-200..... 171-6
 JP-300..... 174-7
 JP-400 (See Model 10C)..... 171
 10C, 10T Tel. Rec. 132-8
 12C, 12T Tel. Rec. (See Model 10C)..... 132
 14C, 14T Tel. Rec. (See Model 10C)..... 132
 16C, 16T Tel. Rec. (See Model 10C)..... 132
 17XC, 17XT Tel. Rec. (See Model 10C)..... 132
 20XC, 20XT Tel. Rec. (See Model 10C)..... 132
 29C Tel. Rec. 130-8
 153 (See Model 150)..... 130
 214A, 217A, B, C, 220A, B, 221A, B, Tel. Rec. 171-7
 254..... 173-8
 255..... 179-7
 312 Tel. Rec. (See Model 10C)..... 132
 316 Tel. Rec. (See Model 10C)..... 132
 350..... 131-9
 412 Tel. Rec. (See Model 10C)..... 132
 416 Tel. Rec. (See Model 10C)..... 132
 1400T Tel. Rec. (See Model 10C)..... 132
 1700C, T Tel. Rec. (See Model 10C)..... 132
 2000C Tel. Rec. (See Model 10C)..... 132
 5000, 5050 Tel. Rec. 88-5
 5200, 5250 (See Model 5000) Tel. Rec. 88
 5600, 5650 (See Model 5000) Tel. Rec. 88
 Ch. 114H Tel. Rec. 162-7
 Ch. 116H, 117H Tel. Rec. (See Ch. 114H)..... 162
 Ch. 317A, 320A, 321A, 324A, Tel. Rec. *
JEFFERSON-TRAVIS
 MR-2B..... 10-22
 MR3..... 17-19
JEWEL
 17C9, 17T9, 17W7 Tel. Rec. 187-7
 21C9, 21T9 Tel. Rec. (See Model 17C9)..... 187
 300..... 23-11
 304..... 23-11
 500A, B, C, 501A, B, C, 502A, B, C, 503A, B, C, 504A, B, C, 505A, B, C, 505 "Pin-Up"..... 18-21
 801 (Triplex)..... 45-14
 814..... 91-10
 819..... 91-8
 915 (See Model 910)..... 99
 920A, 921..... 55-10

JEWEL—Cont.

935, 936 (See Model 920A)..... 55-10
 949..... 105-5
 955..... 98-5
 956..... 144-6
 960, U 961..... 97-8
 985 (See Model 910)..... 99
 5007..... 183-7
 5010..... 136-10
 5020, U..... 136-10
 5040..... 160-5
 5050..... 148-7
 5057U..... 109-7
 5100 E, U..... 159-7
 5200..... 194-6
 5205..... 196-4
KAISER-FRAZER
 100170..... 128-8
 100205..... 139-6
 200001..... 35-13
 200002..... 56-13
KAPPLER
 102T..... 54-10
KARADIO
 80-C..... 66-10
 1275, 1275A..... 85-7
 1276..... 115-4
KAYE-HALBERT
 012 (Ch. 243) Tel. Rec. 169-9
 014 (Ch. 253) Tel. Rec. (Also See Prod. Chge. Bul. 63—Set 197-1)..... 146-8
 024 (Ch. 253) Tel. Rec. (Also See Prod. Chge. Bul. 63—Set 197-1)..... 146-8
 033, 034, 035, 036, 037 (Ch. 242) Tel. Rec. 139-7
 044, 045, 046 (Ch. 253) Tel. Rec. (Also See Prod. Chge. Bul. 63—Set 197-1)..... 146-8
 074, 076, 077 (Ch. 253) Tel. Rec. (Also See Prod. Chge. Bul. 63—Set 197-1)..... 146-8
 114DX (Ch. 253DX) Tel. Rec. (Also See Prod. Chge. Bul. 45—Set 179-1)..... 170-9
 122 (Ch. 243) Tel. Rec. (See Model 012)..... 169
 146 (Ch. 253) Tel. Rec. (See Model 12)..... 146
 146 (Ch. 253DX) Tel. Rec. (See Model 114DX) (Also See Prod. Chge. Bul. 45—Set 179-1)..... 170
 231, 232, 233, 234, 235, 240, 241 (Ch. 231 or 242) Tel. Rec. 139
 (See Model 033)..... 139
 424, 425, 426 (Ch. 253) Tel. Rec. (Also See Prod. Chge. Bul. 63—Set 197-1)..... 146-8
 425, 426 (Ch. 253) Tel. Rec. (See Model 012)..... 146-8
 425, 426 (Ch. DX253) Tel. Rec. (See Model 114DX) (Also See Prod. Chge. Bul. 45—Set 179-1)..... 170
 428 (Ch. 253) Tel. Rec. (See Model 012)..... 170
 428 (Ch. 253DX) Tel. Rec. (See Model 114DX) (Also See Prod. Chge. Bul. 45—Set 179-1)..... 170
 714 (Ch. 253) Tel. Rec. (Also See Prod. Chge. Bul. 63—Set 197-1)..... 146-8
 724 (Ch. 253) Tel. Rec. (Also See Prod. Chge. Bul. 63—Set 197-1)..... 146-8
 731, 733 (Ch. 231 or 242) Tel. Rec. (See Model 033)..... 139
 734, 735, 736, 737 (Ch. 242) Tel. Rec. (See Model 033)..... 139
 744, 745 (Ch. 253) Tel. Rec. (Also See Prod. Chge. Bul. 63—Set 197-1)..... 146-8
 777 (Ch. 253) Tel. Rec. (Also See Prod. Chge. Bul. 63—Set 197-1)..... 146-8
 821-C, 821-T Tel. Rec. *
 914 (Ch. 253) Tel. Rec. (Also See Prod. Chge. Bul. 63—Set 197-1)..... 146-8
 921-C, 921-T Tel. Rec. *
 1621-C, 1621-T Tel. Rec. *
 Ch. 231 (See Model 033)..... 139
 Ch. 242 (See Model 033)..... 139
 Ch. 243 (See Model 012)..... 169
 Ch. 253 (See Model 014)..... 169
 Ch. 253DX (See Model 114DX) (Also See Prod. Chge. Bul. 45—Set 179-1)..... 170
KAY MUSICAL INSTRUMENT CO.
 77..... 42-13
KITCHENAIRE
 5 Tube Radio..... 6-14
KNIGHT (Also see Recorder Listing)
 4D-450..... 40-9
 4G420..... 88-6
 5A150, 5A152, 5A154..... 12-17
 5A-190..... 14-15
 5B-160..... 20-15
 5B-175, 5B-176..... 20-16
 5B-185..... 22-17
 5C-290..... 30-13
 5D-250, 5D-251..... 55-11
 5E-250, 5E-251 (Similar to Chassis)..... 36-25
KNIGHT—Cont.
 5E-457 (Similar to Chassis) 53-23
 5F-525, 5F-526..... 53-13
 5F-565..... 55-12
 5G-563 (Similar to Chassis) 97-1
 5H-570..... 143-10
 5H-571 (See Model 5H-570)..... 143
 5H605..... 131-10
 5H-607, 5H-608 (Similar to Chassis)..... 97-15
 5H-678, 5H-679 (Similar to Chassis)..... 109-7
 5H-700..... 123-7
 5J705..... 174-8
 6A-122..... 9-18
 6A-127..... 9-19
 6A-195..... 16-19
 6B-122 (See Model 6A-127)..... 9
 6B-127 (See Model 6A-127)..... 9
 6C-225, 6D-225, 6D-226..... 30-14
 6D-235..... 54-11
 6D-360..... 39-10
 6E-400 (See Model 449)..... 83
 6H580..... 126-7
 7D-200..... 27-14
 7D-405..... 39-11
 8B-210..... 20-17
 8B-340..... 46-13
 8G-200, 8G-201..... 128-9
 9V-101 Tel. Rec. 78-8
 10B-249..... 42-14
 11C-300..... 29-12
 11D302..... 57-9
 12H610..... 176-5
 14F490, 14F495, 14F496..... 63-12
 15H609 (See Model 511B) 125
 19F492, 19F497, 19F498..... 58-11
 20H611..... 164-4
 93-017..... 31-15
 93-024..... 32-13
 93-103..... 31-16
 93-146..... 36-15
 93-155..... 37-10
 93-191..... 38-8
 93-320..... 74-5
 93-330..... 99-9
 93-350..... 76-13
 93-360..... 79-9
 93-370..... 75-10
 93-380..... 90-8
 93-431..... 167-12
 96-279..... 160-6
 96-326..... 137-5
 96-354 (Similar to Chassis)..... 139-15
 97-870..... 78-9
 449..... 83-5
 511B..... 125-9
LAFAYETTE
 FA15W, FA15Y..... 15-15
 J62, J62C..... 16-21
 MC10B, MC10Y..... 14-16
 MC11..... 28-18
 MC12..... 27-15
 MC13..... 15-16
 MC16..... 27-16
 P564 (Similar to Chassis) 38-5
 IN434, IN435, IN436 (Similar to Chassis)..... 98-5
 IN437 (Similar to Chassis) 121-2
 IN549 (Similar to Chassis) 38-5
 IN551 (Similar to Chassis) 38-6
 IN554, IN555 (Similar to Chassis)..... 55-10
 IN556, IN557 (Similar to Chassis)..... 109-7
 IN559 (Similar to Chassis) 90-7
 IN560 (Similar to Chassis) 90-7
 IN561, IN562 (Similar to Chassis)..... 97-8
 IN819 (Similar to Chassis) 69-7
 1P184 Tel. Rec. (Similar to Chassis)..... 149-13
 1P185, 1P186 Tel. Rec. (Similar to Chassis)..... 149-13
 178M1 Tel. Rec. (Similar to Chassis)..... 149-13
 278M1 Tel. Rec. (Similar to Chassis)..... 149-13
 20CP Tel. Rec. (Similar to Chassis)..... 149-13
LAMCO
 1000..... 16-20
LEAK
 TL/12 (See Model RC/PA/U)..... 166
 RC/PA/U..... 166-12
LEAR (See Recorder Listing)
LEARADIO
 Chassis R-971..... 51-11
 RM-402C (Learavian)..... 42-15
 561, 562, 563..... 1-26
 565, 565BL, 566, 567, 568..... 9-20
 CT259, CT260 Tel. Rec. 119-1A
 CT259, CT262, CT263, CT264, CT265 Tel. Rec. 155-10
 Chassis CT266, CT267, CT269 Tel. Rec. 131-1A
 Chassis CT-270, CT-271, CT-272, CT-273, CT-274, CT-275, CT-276, CT-277, CT-278, CT-279, CT-280, CT-281, CT-282 Tel. Rec. 148-8
 Chassis CT283 Tel. Rec. (See Chassis CT262)..... 155
 Chassis CT284, CT285 Tel. Rec. (See Ch. CT266)..... 131-1A
 Chassis CT286 Tel. Rec. (See Ch. CT266)..... 155
 Chassis CT287, CT288 Tel. Rec. (See Ch. CT266)..... 131-1A
 Chassis CT289 Tel. Rec. (See Model CT262)..... 155
 Chassis CT290 Tel. Rec. (See Ch. CT266)..... 131-1A
 Chassis CT291, CT292 Tel. Rec. (See Chassis CT262)..... 155
LEXINGTON
 6545..... 13-20
LIBERTY
 A6K, A6P, 6K..... 20-18
 507A..... 20-19
LINCOLN (Auto Radio)
 1CH748-1 (1H-18805) (See Ford Model 1CF743-1)..... 158
 2CH753 (FAA-18805-A) (See Ford Model 2CF754)..... 167
 7MLO80 (5EH-18805-A), 7MLO81 (5EH-18805-B), 8M1882 (8L-18805-A), 8M1882Z (8H-18805-A) (Ch. BE82)..... 44-7
 8M1985 (8L-18805-A), 8M1985B (8L-18805-B), 8M1985Z (8H-18805-A), 8M1985Z2 (8H-18805-B)..... 83-4
LINCOLN
 513L-B..... 2-10
LINCOLN (ALLIED RADIO CORP.)
 5A-110..... 5-34
LINDEX CORP. (See Swank)
LIPAN (See Supreme)
LULLABY (See Mitchell)
LYMAN
 CM10, CM20..... 44-8
LYRIC (Also See Rauland)
 546T, 546TV, 546TW..... 7-17
MAGIC TONE
 500, 501..... 5-40
 504 (Bottle Receiver)..... 22-18
 508 (Keg Radio)..... 38-9
 510..... 52-10
 900 (See Model 508)..... 38
MAGNAVOX
 104 Series (Ch. CT301 thru CT314) Tel. Rec. 161-4
 Chassis AMP-101A, AMP-101B..... 43-12
 Chassis AMP-108A, AMP-108B..... 41-10
 Chassis AMP-109..... *
 Chassis AMP-110..... *
 Chassis AMP-111A, B, C..... 68-10
 Chassis AMP-116..... *
 Chassis CR-188 (155B Regency Symphony)..... 18-22
 Chassis CR190A, CR190B..... 46-14
 Chassis CR-192A, CR-192B..... 41-11
 Chassis CR-197C..... 37-11
 Chassis CR-198A, B, C (Hoppelwhite, Modern Symphony)..... 17-20
 Chassis CR-199..... 63-13
 Chassis CR-200A, B, C, D, E, F..... 44-9
 Chassis CR-202..... *
 Chassis CR-203..... *
 Chassis CR-204..... *
 Chassis CR-204A..... *
 Chassis CR-207A, B, C, D..... 41-12
 Chassis CR-208A, CR-208B..... 43-13
 Chassis CR-209..... *
 Chassis Models CR210A, CR-210B..... 52-11
 Chassis CR-211..... *
 Chassis CR-AMP-111A..... 68
 Chassis CR-213..... *
 Chassis CR-215..... *
 Chassis CR-216..... *
 Chassis CR-218..... *
 Chassis CR-219..... *
 Chassis CR-217..... *
 Chassis CR-223..... *
 Chassis CR-229..... *
 Chassis CT-214, CT-218, Tel. Rec. 62-13
 Chassis CT-219, CT-220 Tel. Rec. 82-7
 Chassis CT-221 Tel. Rec. (See Ch. CT-214)..... 62
 Chassis CT-222 Tel. Rec. (See Ch. CT-219)..... 82
 Chassis CT-224 Tel. Rec. 97A-8
 Chassis CT-232 Tel. Rec. 93A-9
 Chassis CT-235 Tel. Rec. (See Ch. CT-224)..... 97A
 Chassis CT-236 Tel. Rec. (See Model CT-232)..... 93A
 Chassis CT237, CT238 Tel. Rec. (Supp. to CT219)..... 95A-9
 Chassis CT239 Tel. Rec. (See Ch. CT232)..... 93A
 Chassis CT244, CT245, CT246 Tel. Rec. (See Ch. CT232)..... 93A
 Chassis CT247, CT248, CT249 Tel. Rec. *
 Chassis CT250, CT251 Tel. Rec. 135-1A
 Chassis CT252, CT253 Tel. Rec. 95A-9
 Chassis CT255 Tel. Rec. *
 Chassis CT257, CT258, CT259, CT260 Tel. Rec. 119-1A
 Chassis CT262, CT263, CT264, CT265 Tel. Rec. 155-10
 Chassis CT266, CT267, CT269 Tel. Rec. 131-1A
 Chassis CT-270, CT-271, CT-272, CT-273, CT-274, CT-275, CT-276, CT-277, CT-278, CT-279, CT-280, CT-281, CT-282 Tel. Rec. 148-8
 Chassis CT283 Tel. Rec. (See Chassis CT262)..... 155
 Chassis CT284, CT285 Tel. Rec. (See Ch. CT266)..... 131-1A
 Chassis CT286 Tel. Rec. (See Ch. CT266)..... 155
 Chassis CT287, CT288 Tel. Rec. (See Ch. CT266)..... 131-1A
 Chassis CT289 Tel. Rec. (See Model CT262)..... 155
 Chassis CT290 Tel. Rec. (See Ch. CT266)..... 131-1A
 Chassis CT291, CT292 Tel. Rec. (See Chassis CT262)..... 155

LINCOLN—Cont.

1CH748-1 (1H-18805) (See Ford Model 1CF743-1)..... 158
 2CH753 (FAA-18805-A) (See Ford Model 2CF754)..... 167
 7MLO80 (5EH-18805-A), 7MLO81 (5EH-18805-B), 8M1882 (8L-18805-A), 8M1882Z (8H-18805-A) (Ch. BE82)..... 44-7
 8M1985 (8L-18805-A), 8M1985B (8L-18805-B), 8M1985Z (8H-18805-A), 8M1985Z2 (8H-18805-B)..... 83-4
LINCOLN
 513L-B..... 2-10
LINCOLN (ALLIED RADIO CORP.)
 5A-110..... 5-34
LINDEX CORP. (See Swank)
LIPAN (See Supreme)
LULLABY (See Mitchell)
LYMAN
 CM10, CM20..... 44-8
LYRIC (Also See Rauland)
 546T, 546TV, 546TW..... 7-17
MAGIC TONE
 500, 501..... 5-40
 504 (Bottle Receiver)..... 22-18
 508 (Keg Radio)..... 38-9
 510..... 52-10
 900 (See Model 508)..... 38
MAGNAVOX
 104 Series (Ch. CT301 thru CT314) Tel. Rec. 161-4
 Chassis AMP-101A, AMP-101B..... 43-12
 Chassis AMP-108A, AMP-108B..... 41-10
 Chassis AMP-109..... *
 Chassis AMP-110..... *
 Chassis AMP-111A, B, C..... 68-10
 Chassis AMP-116..... *
 Chassis CR-188 (155B Regency Symphony)..... 18-22
 Chassis CR190A, CR190B..... 46-14
 Chassis CR-192A, CR-192B..... 41-11
 Chassis CR-197C..... 37-11
 Chassis CR-198A, B, C (Hoppelwhite, Modern Symphony)..... 17-20
 Chassis CR-199..... 63-13
 Chassis CR-200A, B, C, D, E, F..... 44-9
 Chassis CR-202..... *
 Chassis CR-203..... *
 Chassis CR-204..... *
 Chassis CR-204A..... *
 Chassis CR-207A, B, C, D..... 41-12
 Chassis CR-208A, CR-208B..... 43-13
 Chassis CR-209..... *
 Chassis Models CR210A, CR-210B..... 52-11
 Chassis CR-211..... *
 Chassis CR-AMP-111A..... 68
 Chassis CR-213..... *
 Chassis CR-215..... *
 Chassis CR-216..... *
 Chassis CR-218..... *
 Chassis CR-219..... *
 Chassis CR-217..... *
 Chassis CR-223..... *
 Chassis CR-229..... *
 Chassis CT-214, CT-218, Tel. Rec. 62-13
 Chassis CT-219, CT-220 Tel. Rec. 82-7
 Chassis CT-221 Tel. Rec. (See Ch. CT-214)..... 62
 Chassis CT-222 Tel. Rec. (See Ch. CT-219)..... 82
 Chassis CT-224 Tel. Rec. 97A-8
 Chassis CT-232 Tel. Rec. 93A-9
 Chassis CT-235 Tel. Rec. (See Ch. CT-224)..... 97A
 Chassis CT-236 Tel. Rec. (See Model CT-232)..... 93A
 Chassis CT237, CT238 Tel. Rec. (Supp. to CT219)..... 95A-9
 Chassis CT239 Tel. Rec. (See Ch. CT232)..... 93A
 Chassis CT244, CT245, CT246 Tel. Rec. (See Ch. CT232)..... 93A
 Chassis CT247, CT248, CT249 Tel. Rec. *
 Chassis CT250, CT251 Tel. Rec. 135-1A
 Chassis CT252, CT253 Tel. Rec. 95A-9
 Chassis CT255 Tel. Rec. *
 Chassis CT257, CT258, CT259,

MAGNAVOX—MERCURY

MAGNAVOX—Cont.

Chassis CT294 Tel. Rec. (See Ch. CT266) 131-1A
 Chassis CT295, CT296 Tel. Rec. *
 Chassis CT297 Tel. Rec. (See Ch. CT292) 155
 CT301 thru CT314 Tel. Rec. (See 104 Series) 161
 Chassis CT331 thru CT349 (105 Series) Tel. Rec. 168-10
 Chassis CT358 (107 Series) Tel. Rec. *
 Chassis CT362, CT363 (105L Series) Tel. Rec. *
 Chassis CT372, CT373 (105L Series) Tel. Rec. *
 Chassis MCT228 Tel. Rec. 95A-9

MAGNECORD (See Recorder Listing)

MAGUIRE (Also see Record Changer Listing)

500B1, 500BW, 500D1, 500DW 6-15
 561B1, 561BW, 561D1, 561DW 6-16
 571 4-10
 661, 661A 12-18
 700A 7-18
 700E 15-17

MAJESTIC

G-414 Tel. Rec. 133-8
 G-614 Tel. Rec. (See Model G-414) 133
 G-624 Tel. Rec. (See Model G-414) 133
 G-914 Tel. Rec. (See Model G-414) 133
 5A410 (Ch. 4501) 1-30
 5A430 (Ch. 4504) 23-12
 5A445, 5A445R 27-17
 5AK711 (See Model 5AK780, (Ch. 5805A)) 28-19
 5C-2, 5C-3 169-10
 5LA5, 5LA6 130-9
 5LA7, 5LA8 132-9
 6FM714 (Ch. 6802D) 50-10
 6FM773 (Ch. 6811D) 57-10
 7K738 (See Model 7JK777R) 17
 7C432 (Ch. 4706) 24-17
 7C447 (Ch. 4707) 56-14
 7FM877, 7FM888 (Ch. 7C11D) 27-18
 7JK777R (Ch. 4708R) 60-18
 7JL866 (Ch. 7C25A) 26-17
 7P420 (Ch. 4705) 22-19
 7S433, 7S450, 7S470 (Ch. 4702, 4703) 65-8
 7TV850, 7TV852 (Ch. 18C90, 18C91) Tel. Rec. 29-13
 7YR752 (Ch. 7B04A) 42-17
 7YR753 (Ch. 7B09A-1), 7YR772 (Ch. 7B09A) 30-15
 8FM744 (Ch. 8806D) 29-14
 8FM775 (Ch. 8808D) 54-12
 8FM889 (Ch. 8C07D) 47-11
 8JL885 (Ch. 4810B) 8-19
 8S452, 8S473 (Ch. 4810) 65
 10FM891 (See Model 10FM981) 65-8
 10FM981 (Ch. 10C23E) 108-7
 12C4, 12C5 Tel. Rec. 108-7
 12FM475, 12FM778 28-20
 12FM779 (Ch. 41201) 59-11
 12FM895 (Ch. 12C22E) 108
 12T2, 12T3 Tel. Rec. (See Model 12C4) 108
 12T6 Tel. Rec. (See Model 12T2) 108
 14C4 Tel. Rec. (See Model 12C4) 108
 14CT4 Tel. Rec. (See Model G-414) 133
 14T2 Tel. Rec. (See Model 12C4) 108
 16C4, 16C5 Tel. Rec. (See Model 12C4) 108
 16CT4, 16CT5 Tel. Rec. (See Model G-414) 133
 16T2, 16T3 Tel. Rec. (See Model 12C4) 108
 17C62, 17C64, 17C65 (Series 106) Tel. Rec. (See Model 70) (Also see Prod. Chge. Bul. 43-Set 177-1) 153
 17DA (Ch. 101) Tel. Rec. 127-7
 17GA, 17HA (Ch. 101) Tel. Rec. (See Model 17DA) 127
 17T6A1, 17T6B1, 17T62 (Series 106) Tel. Rec. (See Model 70) (Also see Prod. Chge. Bul. 43-Set 177-1) 153
 19C6, 19C7 Tel. Rec. (See Model G-414) 133
 20C82, 20C83, 20C84 (Series 108) Tel. Rec. (See Model 70) (Also see Prod. Chge. Bul. 43-Set 177-1) 153
 20FP88, 20FP89 (Series 109) Tel. Rec. 170-10
 20F82, 20F83, 20F85, 20F86, 20F87 (Series 108) Tel. Rec. (See Model 70) (Also see Prod. Chge. Bul. 43-Set 177-1) 153
 20F81 (Series 108) Tel. Rec. (See Model 70) (Also see Prod. Chge. Bul. 43-Set 177-1) 153
 20T8A1, 20T82, 20T83 (Series 108) Tel. Rec. (See Model 70) (Also see Prod. Chge. Bul. 43-Set 177-1) 153

MAJESTIC—Cont.

20T84 (Series 108) Tel. Rec. (See Model 70) (Also see Prod. Chge. Bul. 43-Set 177-1) 153
 21C30, 21C31 (Series 108) Tel. Rec. (See Model 70) 153
 21D40, 21D41 (Series 108) Tel. Rec. (See Model 70) 153
 21D50, 21D51 (Series 108) Tel. Rec. (See Model 70) 153
 21F86, 21F87 (Series 108) Tel. Rec. (See Model 70) (Also see Prod. Chge. Bul. 43-Set 177-1) 153
 21F89, 21F89 (Series 108.5) Tel. Rec. (See Model 70) 153
 21T20, 21T21 (Series 108) Tel. Rec. (See Model 70) 153
 22 thru 35 (Series 106-5) Tel. Rec. (See Model 70) 153
 70, 72, 73 (Series 106) Tel. Rec. (Also see Prod. Chge. Bul. 43-Set 177-1) 153-8
 80FMP2 137-6
 120, 121, 121B (Ch. 99) Tel. Rec. (See Model 17DA) 127
 141, 141B (Ch. 100) 141C (Ch. 101), 142, 142B (Ch. 100) Tel. Rec. (See Model 17DA) 127
 143 Tel. Rec. (See Model 17DA) (Also see Prod. Chge. Bul. 37-Set 166-2) 127
 160, 160B, 162, 163 (Ch. 101) Tel. Rec. (See Model 17DA) 127
 170 (Ch. 101) Tel. Rec. (See Model 17DA) 127
 173 Tel. Rec. (See Model 17DA) (Also see Prod. Chge. Bul. 37-Set 166-2) 127
 700, 701 (Series 106) Tel. Rec. (See Model 70) (Also see Prod. Chge. Bul. 43-Set 177-1) 153
 712, 715, 717, 718, 719 (Series 106) Tel. Rec. (See Model 70) (Also see Prod. Chge. Bul. 43-Set 177-1) 153
 712, 715, 717, 718, 719 (Series 106) Tel. Rec. (See Model 70) (Also see Prod. Chge. Bul. 43-Set 177-1) 153
 800, 801, 802, 803, 804 (Series 108) Tel. Rec. (See Model 70) (Also see Prod. Chge. Bul. 43-Set 177-1) 153
 843, 843 (Ch. 101) Tel. Rec. (See Model 17DA) 127
 910, 911 (Ch. 103) Tel. Rec. (See Model 17DA) 127
 1042, G, GU, T, 1043, G, GU, T Tel. Rec. (See Model 12C4) 108
 1142, 1143 Tel. Rec. (See Model 12C4) 108
 1244, G, GU, T, TX, 1245, G, GU, T, TX Tel. Rec. (See Model 12C4) 108
 1348 Tel. Rec. (See Model 12C4) 108
 1400, 1400B (Ch. 100), 1401 (Ch. 105) Tel. Rec. (See Model 17DA) 127
 1546, G, GU, T, 1547, G, GU, T, 1548, G, GU, T, 1549, G, GU, T Tel. Rec. (See Model 12C4) 108
 1600, 1600B (Ch. 101) Tel. Rec. (See Model 17DA) 127
 1605, 1605B (Ch. 102) Tel. Rec. (See Model 17DA) 127
 1610, 1610B (Ch. 102) Tel. Rec. (See Model 17DA) 127
 1646, 1647, 1648, 1649 Tel. Rec. (See Model 12C4) 108
 1671, 1672, 1673, 1674, 1675 Tel. Rec. (See Model G-414) 133
 1700C Tel. Rec. (See Model 17DA) (Also see Prod. Chge. Bul. 37-Set 166-2) 127
 1710 (Ch. 101) Tel. Rec. (See Model 17DA) 127
 1710C Tel. Rec. (See Model 17DA) (Also see Prod. Chge. Bul. 37-Set 166-2) 127
 1720, 1721 Tel. Rec. (See Model 17DA) (Also see Prod. Chge. Bul. 37-Set 166-2) 127
 1900 Tel. Rec. 95A-10
 1974, 1975 Tel. Rec. (See Model G-414) 133
 20427, 20437 Tel. Rec. (See Model 12C4) 108
 25467, 25477, 25487, 25497 Tel. Rec. (See Model 12C4) 108
 Ch. 5B01A (See Model 5AK711) 27
 Ch. 5B05A (See Model 5AK731) 28
 Ch. 6B02D (See Model 6FM773) 57
 Ch. 7B04A (See Model 7YR752) 29
 Ch. 7B09A (See Model 7YR772) 42
 Ch. 7B09A1 (See Model 7YR753) 42

MAJESTIC—Cont.

Ch. 7C11D (See Model 7FM887) 56
 Ch. 7C25A (See Model 7JL866) 60
 Ch. 8806D (See Model 8FM744) 30
 Ch. 8807D (See Model 8FM776) 29
 Ch. 8808D (See Model 8FM775) 29
 Ch. 8C07D (See Model 8FM889) 54
 Ch. 10C23E (See Model 10FM981) 65
 Ch. 12826E (See Model 12FM475) 28
 Ch. 12C22E (See Model 12FM895) 59
 Ch. 18C90, 18C91 (See Model 7TV850) *
 Ch. 4501 (See Model 5A410) 1
 Ch. 4504 (See Model 5A430) 1
 Ch. 4506 (See Model 5A445) 23
 Ch. 4702, 4703 (See Model 7S433) 22
 Ch. 4705 (See Model 7P420) 26
 Ch. 4706 (See Model 7C432) 14
 Ch. 4707 (See Model 7C447) 14
 Ch. 4708R (See Model 7JK777R) 27
 Ch. 4810 (See Model 8S452) 8
 Ch. 4810B (See Model 8JL885) 4
 Ch. 41201 (See Model 12FM475) 28

MALLORY

TV-101 (Below Serial No. 200,000) Tel. UHF Conv. 194-7
 TV-101 (Serial No. 200,000 and Above) Tel. UHF Conv. 194-8

MANTOLA (B. F. Goodrich Co.)

R630-PP 3-22
 R643-PM (See Model R643W) 4
 R643W 4-29
 R652, R652N 4-29
 R654-PM, R654-PV 9-22
 R655W (Ch. No. 501APH) 8-20
 R662, R662N 3-33
 R664-PM, R664-PV, R664-W (See Model R-643-W) 4
 R-7543 18-23
 R-75143 39-12
 R-75152 38-10
 R-75343 (See Model 75134) 39
 R-76143 (See Model 2486) 25
 R-76162 (Fact. No. 7160-17) 51-12
 R-78162 43-11
 11-701 25-17
 2486 4
 92-502 (See Model R643W) 4
 92-503, 92-504 (See Models R654PM, PV) 3
 92-505, 92-506 (See Models R664PM, PV) 23
 92-516, 92-517 92-520, 92-521, 92-522 68-11
 92-529 150-8
 92-752 104-7

MARK (See Record Changer Listing)

MARK SIMPSON (See Masco)

MARS 630K Tel. Rec. *
 630K-2 Tel. Rec. *
 630K-3B Tel. Rec. *
 630K-33 Tel. Rec. *

MASCO (Also see Recorder Listing)

IM-5 41-13
 1M-10 186-8
 JMR (Sub-Station) 31-17
 JM-5 (Master Station) 42-18
 JM-10 187-8
 JMP-6 147-7
 JMP-12 (See Model JMP-6) 147
 MA-SNO 45-15
 MA-BN 119-8
 MA-10HF 112-4
 MA-10EX 113-4
 MA-12HF 51-13
 MA-17 14-32
 MA-17N 50-11
 MA-17P (See Model MA-17) 14
 MA-17N (See Model MA-17N) 50
 MA-20HF 28-21
 MA-25 16-24
 MA-25EX 60-13
 MA-25HF 54-13
 MA-25N 43-14
 MA-25NR 49-12
 MA-25P (See Model MA-25) 16
 MA-25PN (See Model MA-25N) 43
 MA-35 21-20
 MA-35N 44-11
 MA-35RC (See Model MA-35) 21
 MA-50 30-16
 MA-50N (See Model MA-SNO) 45
 MA-50NR 53-14

MASCO—Cont.

MA-60 119-9
 MA-75 28-22
 MA-75N 52-27
 MA-77, MA-77R 190-7
 MA-121 24-21
 MA-125 188-8
 MA-808 26-18
 MAP-15 26-19
 MAP-18 59-12
 MAP-105 25-18
 MAP-105N 52-12
 MAP-120 21-21
 MAP-120N 46-15
 MB-9N 196-5
 MB-50N 58-12
 MB-60 (Lato) 148-10
 MB-75 61-15
 MC-10 47-12
 MC-25, MC-25P 17-21
 MC-25N, MC-25PC 57-11
 MC-126, MC-126P 111-8
 MCR-5 15-18
 ME-8 152-10
 ME-18, ME-18P 151-8
 ME-37 155-11
 ME-37, ME-36R 154-7
 ME-52 149-7
 MHP-110 114-6
 MHP-110X 115-5
 Midgetalk 116-7
 MM-27 153-9
 MPA-3, MPT-4 16-25
 MSD-16 150-9
 MU-5 117-6
 MU-17 185-8
 RK-5 (Early) 33-11
 RK-5, RK-5L, RK-5M, RK-5ML, RK-5SL 168-11
 T-16 123-8
 TD-16 120-8
 TP-16A 30-17
 76, 711 20-20
 86, 811 20-21

MASON

45-1A 14-18
 45-1B, 45-1P, 45-3, 45-4, 45-5 (See Model 45-1A) 14

MATTISON

630K Tel. Rec. *
 630-2, 5, -5SRB *
 630-6A, -6AB Tel. Rec. *
 1950-30 Tel. Rec. *

MAYFAIR

510, 510W, 520, 520W, 530, 530W 25-20
 550, 550W 24-22

McGOHAN (Don)

MG-7 195-7
 MG-10B 190-8
 MG-18B 191-6
 MG-20-B 189-5
 MG-30-B 188-9

McGRADE

M-100 16-27

MECK (Trail Blazer-Plymouth)

CD-500 (PX-5C5-EW-19) 33-12
 CE-500 (5C5-P12) 37-12
 CM-500 (5D7-W18) 34-11
 CR-500 38-11
 CW-500 40-11
 CX-500 48-13
 DA601, DB6021 81-10
 EC720 85-8
 EF-730, EG-731 (Ch. 10003) 89-8
 EV-740 104-7
 JM717C, CU, T, TU (Ch. 9021), JM720C, CU, T, TU (Ch. 9021) Tel. Rec. 148-11
 JM-717C, T, JM-720C, T, JM-721C, CD (Ch. 9032) Tel. Rec. 186-9
 MM510T, MM512T, MM516C, MM516T, Tel. Rec. 110-9
 MM614C, T (Ch. 9018) Tel. Rec. (Also See Prod. Chge. Bul. 12-Set 120-1) 117-8
 MM616C, T (Ch. 9018) Tel. Rec. (See Model MM614C) 117-8
 MM-617C, T (Ch. 9032) Tel. Rec. (See Model JM-717C) 186
 MM619C (Ch. 9018) Tel. Rec. (See Model MM614C) (Also See Prod. Chge. Bul. 12-Set 120-1) 117
 MM-620C, T (Ch. 9032) Tel. Rec. (See Model JM-717C) 186
 M616C, T (Ch. 9023) Tel. Rec. (See Model JM717C) 148
 M620C, T (Ch. 9023) (See Model JM717C) 148
 PM-5C5-DW10 2-4
 PM-5C5-PW10 12-19
 RC-5C5-P 1-9
 RC-6A7-P6 31-19
 SA-10, SA-20 101-4
 XA-701 (See Model XE-705) 61-16
 XA-701 61
 XF-777 Tel. Rec. 101-5
 XL750 Tel. Rec. 76-14
 XN-752 Tel. Rec. (See Model XF-777) 101
 XOB (See Model MM510T) 110

MECK—Cont.

XP-775, XQ-776, XQA-776 Tel. Rec. (See Model XF-777) 101
 XQA, XQR Tel. Rec. (See Model MM510T) 110
 XRA, XRPT Tel. Rec. (See Model MM510T) 110
 XR-778, XS-786, XT-785 Tel. Rec. (See Model XF-777) 101
 XSA Tel. Rec. (See Model MM510T) 110
 XSB (Ch. 9018) Tel. Rec. (See Model MM614C) (Also See Prod. Chge. Bul. 12-Set 120-1) 117
 XSC (Ch. 9018) Tel. Rec. (See Model MM614C) 117
 XSD (Ch. 9018) Tel. Rec. (See Model MM614C) 117
 XSPT Tel. Rec. (See Model MM510T) 110
 XTA, XTR Tel. Rec. (See Model MM510T) 110
 XX900 Tel. Rec. (See Model MM510T) 110
 487 *
 4C7 *
 5A7-P11, 5A7-PB11 31-18
 5D7/WL18 21-22
 6A6-W4 16-26
 514C, T (Ch. 9018) Tel. Rec. (See Model MM614C) (Also see Prod. Chge. Bul. 12, Set 120-1) 117
 614C, 614TL (Ch. 9022) Tel. Rec. (See Model JM717C) 148
 616C, T (Ch. 9018) Tel. Rec. (See Model MM614C) (Also see Prod. Chge. Bul. 12, Set 120-1) 117
 617C, 617TL (Ch. 9022) Tel. Rec. (See Model JM717C) 148
 619C, T (Ch. 9018) Tel. Rec. (See Model MM614C) (Also see Prod. Chge. Bul. 12, Set 120-1) 117

MEDCO (See Teleonic)

MEISSNER

TV-1 (Ch. 24TV) Tel. Rec. 56-15
 4E (See Maguire Model 571) 44
 661 (See Maguire Model 571) 161-5
 8B1 37-12
 9A1 123-9
 9-1065 3-15
 9-1091A, 9-1091B 35-15
 9-1091C 116-8
 9-1093 55-13
 16A 105-6
 24TV Tel. Rec. (See Model TV1) 56
 25TV Tel. Rec. *
 574 (See Maguire Model 571) 44
 661 (See Maguire Model 12-19 Series) 27

MERCURY (Automobile)

GM891 (OM-18805-A) (See Ford Model CF909) 109
 ICM747 (1M-18805) (See Ford Model ICF743) 133
 1CM747-1 (1M-18805) (See Ford Model ICF743) 158
 2CM752 (FAB-18805-A) (See Ford Model 2CF754) 167
 6MM790, E (See Ford Model 6MP780) 62
 8M890 (Ch. 8E90) (BM-18805-B) 49-13
 8M890 (BM-18805-B) 69-10
 8M891 (BM-18805-B) 83-4
 8M891-E (BM-18805) 83-4

MERCURY (Pacific-Mercury)

2013, 2080 (Ch. 150-2) Tel. Rec. (Also see Prod. Chge. Bul. 57-Set 190-1) 172-6
 2081 (Ch. 150-4 and Radio Ch. 155) Tel. Rec. 198-11
 2113, 2115 (Ch. 150-1, -81) Tel. Rec. (See Model 2013) (Also see Prod. Chge. Bul. 57-Set 190-1) 172
 2116, 2117 (Ch. 150-81) Tel. Rec. (See Model 2013) (Also see Prod. Chge. Bul. 57-Set 190-1) 172
 2181 (Ch. 150-31, -61 and Radio Ch. 155) Tel. Rec. 198-11
 2192 (Ch. 150-10 and Radio Ch. 160) *
 2401 (Ch. 150-5, -51) Tel. Rec. (See Model 2013) (Also see Prod. Chge. Bul. 57-Set 190-1) 172
 4120 (Ch. 150-2) Tel. Rec. (See Model 2013) (Also see Prod. Chge. Bul. 57-Set 190-1) 172
 4317 (Ch. 150-7, -12) Tel. Rec. *

MERCURY—Cont.

4317 (Ch. 150-9) Tel. Rec. (See Model 2013) 172

4320 (Ch. 150-2, -15) Tel. Rec. (See Model 2013) [Also see Prod. Chge. Bul. 57—Set 191-1] 172

4421 (Ch. 150-81) Tel. Rec. (See Model 2013) [Also see Prod. Chge. Bul. 57—Set 191-1] 172

4721 (Ch. 150-10) and Radio Ch. 160) * Ch. 150-2 (See Model 2013) 172

Ch. 150-4 (See Model 2081) Ch. 150-5 (See Model 2013) 172

Ch. 150-7 (See Model 4317) * Ch. 150-9 (See Model 2013) 172

Ch. 150-10 (See Model 2192) * Ch. 150-11 (See Model 2013) 172

Ch. 150-12 (See Model 4317) * Ch. 150-15 (See Model 2013) 172

Ch. 150-31 (See Model 2181) Ch. 150-51 (See Model 2013) 172

Ch. 150-61 (See Model 2181) Ch. 150-81 (See Model 2013) 172

Ch. 155 (See Model 2081)

MIDLAND M68 2—30

MIDWEST P-6, PB-6 14—19

R-12, RG-12, RT-12 (Ch. RGL-12) 44—12

R-12, RG-12, RT-12 (Ch. RGT-12) 44—13

R-16, RG-16, RT-16 (Ch. RGT-16) 45—16

SB, ST-8, TM-8 (Ch. STM-8) 15—19

S-12, SG-12, ST-12 (Ch. SGT-12) 21—23

S-16, SG-16, ST-16 (Ch. SGT-16) 21—24

TRC12 (Ch. TR-12) Tel. Rec. (See Model S-16) 21

MILWAUKEE ERWOOD (See Record Changer Listing)

MINERVA L-702 (See W-702B) 12

L-728, W-728 11—15

W-117, Tropic Master 6—17

W-117-3 11—14

W-702B 12—20

W710, W710A (W119) 5—25

W-728 (See Model L-728) 11

410, 411 41—14

702H, 702H-1 30—18

729 (Portapal) 23—14

MIRRORTONE (Also See Meck) 14MTS Tel. Rec. 163—7

16MC, MT, 17MC, MT, MZ-C, MZ-T Tel. Rec. (See Model 14MTS) 163

17PC, 17PT (Ch. 9025) Series "P" Tel. Rec. 175—12

20MC, MT, MZ-C, MZ-T Tel. Rec. (See Model 14MTS) 163

20PC Tel. Rec. 175—12

20PT Tel. Rec. (See Model 17PC) 175

MITCHELL T16-B, -M, T16-2KB, T16-2KM, T17-B, -M Tel. Rec. 154—8

T1728, T-172M Tel. Rec. 189—11

T212-B, -M Tel. Rec. 190—9

1250, 1251 55—14

1252, 1253 155—12

1254, 1255 159—8

1256 156—8

1267 158—7

1268R 127—9

MOLDED INSULATION CO. (Also see Viz) MR-6 (Wiretone) 41—15

MONITOR M-403 (Fact. No. 470-2) 22—20

M-500 (Fact. No. 475) 28—23

M-510 (Fact. No. 472) 23—15

M-3070 29—15

RA-50 24—23

TA56M, TW56M 6—18

MONITORADIO (Radio Apparatus) AR-1 164—5

AR-3 175—13

M-51A 162—8

M-101 159—9

MONTGOMERY WARD (See Airline)

MOPAR 602 (671A) 19—20

603 65—9

604 106—9

606 133—9

607 170—11

802 (C-4608) 18—24

802 (C-4608) (Revised) 42—19

803 (PD-4908) 66—12

804 67—12

805 (C-4908) 71—11

806, 807 (See Model 803) 66

808 107—6

MOPAR—Cont.

809 (C-5009) 71

(See Model 805) 139—8

812 (P-5106) 139—8

813 (D5107) (See Model 812) 139—7

814 137—7

815 (C-5109) (See Model 812) 139

816 (C-5110) (See Model 812) 139

817 (C-5111) (See Model 812) 139

MOTOROLA (Also see Record Changer Listing)

AR-96-23 (M-5) 11—16

BK0-A (See Ch. 10A) 106

BK2A (Ch. 2A and P-2 or PB-2) 197—7

BK2M (Ch. 2M and P-2 or PB-2) 197—7

BK-6 (Buick) 40—23

BK8, BK8X (See Ch. 8A) 40—23

CR-6 (Chrysler) 20—24

CR-76 25—21

CT0 (See Model CT9) 82

CT1 (See Ch. 1A) 134

CT1M 143—11

CT2A (Ch. 2A and P-2 or PB-2) 197—7

CT2M (Ch. 2M and P-2 or PB-2) 197—7

CT-6 (Chevrolet) 8—21

CT8 (See Ch. 8A) 46

CT8-A (See Ch. 10A) 106

CT9 82—8

FD-6 (Ford) 7—20

FD7 (Ford) (See Model FD6) 7

FD8 (See Ch. 8A) 46

GMOT (See Ch. 10A) 106

GM72A (Ch. 2A and P-2 or PB-2) 197—7

GM72M (Ch. 2M and P-2 or PB-2) 197—7

GM9T (See Ch. 8A) 46

GM9T-A (See Ch. 10A) 106

HJ2A (Ch. 2A and P-2 or PB-2) 197—7

HJ2M (Ch. 2M and P-2 or PB-2) 197—7

HNO (See Ch. 10A) 106

HN2A (Ch. 2A and P-2 or PB-2) 197—7

HN2M (Ch. 2M and P-2 or PB-2) 197—7

HNB, HN9 (See Ch. 8A) 46

110TC (See Ch. 10A) 106

112TC (See Ch. 1A) 134

112T2 (See Ch. 1A) 134

KR1 (See Ch. 1A) 134

MOTOROLA—Cont.

KR2A (Ch. 2A and P-2 or PB-2) 197—7

KR2M (Ch. 2M and P-2 or PB-2) 197—7

KR8, KR9 (See Ch. 8A) 46

KR9A (See Ch. 10A) 106

NHIC 139—9

NH2AC (See Nash AC-152) 184

NH6 (Nash) 9—24

NH8 (See Ch. 8A) 46

OEO (See Ch. 10A) 106

OE2 (See Ch. 8A) 46

OE2A (Ch. 2A and P-2 or PB-2) 197—7

OE2M (Ch. 2M and P-2 or PB-2) 197—7

OE6 (Oldsmobile) (See Model CT6) 8

OEB, OE9 (See Ch. 8A) 46

PCO (See Ch. 10A) 106

PC2 (See Ch. 8A) 46

PC2A (Ch. 2A and P-2 or PB-2) 197—7

PC2M (Ch. 2M and P-2 or PB-2) 197—7

PC6 (Pontiac) (See Model CT6) 8

PC8, PC9 (See Ch. 8A) 46

PC9-A (See Ch. 10A) 106

PD2A (Ch. 2A and P-2 or PB-2) 197—7

PD2M (Ch. 2M and P-2 or PB-2) 197—7

SROB (Ch. OB) 105—7

SRIB (See Ch. 1B) 136

SR2A (Ch. 2A and P-2 or PB-2) 197—7

SR2M (Ch. 2M and P-2 or PB-2) 197—7

SR6, SR8, SR9 (See Ch. 8A) 46

SR9A (See Ch. 10A) 106

TC-101, B Tel. UHF Conv. 196—6

TK-17M, TK-19M, TK-20M, TK-22M, TK-23M, TK-24M Tel. UHF Conv. 193—5

VF102, A, C (Ch. TS-7 and Radio Ch. HS-317) Tel. Rec. (See Model VK101) 51

VF103, VF103M (Ch. TS-8) Tel. Rec. 73—8

VK101, B, M (Ch. TS-5 and Radio Ch. HS-108) Tel. Rec. 51—14

VK106 (Ch. TS-9D) Tel. Rec. Photofact Servicer. 82

VK106, B, M (Ch. TS-9, A, B, C) Tel. Rec. (See Model VK107) (Ch. TS-9E1) Tel. Rec. 77—6

MOTOROLA—Cont.

VT71B, M-A (Ch. 48 through J) Tel. Rec. 55—16

VT-73, VT-73A (Chassis TS-4J Late) Tel. Rec. 71—12

VT101 (Ch. TS-3) Tel. Rec. (See Model VK101) 51

VT105 (Ch. TS-9D) Tel. Rec. Photofact Servicer. 82

VT105, VT105M (Ch. TS-9, TS-9A, TS-9B, TS-9C) Tel. Rec. 67—13

VT107 (Ch. TS-9D) Tel. Rec. Photofact Servicer. 82

VT107, B, M (Ch. TS-9, A, B, C) Tel. Rec. (See Model VT105) 67

VT121 (Ch. TS-15) Tel. Rec. 91A-9

WR6 (Ch. HS-18) 5—2

WR7, WR8 (See Model 677012) 5

WS1C (See Willys Model 677012) 156

WS2C (See Willys 679517) 172

2MF (See Ford Model 2MF) 175

5A1 (Ch. HS-6) 2—11

5A5 (Ch. HS-15) 3—11

5A7 (Ch. HS-62) 5A7A (Ch. HS-62A) 29—16

5C1 (Ch. HS-228) 116—9

5C2 (Ch. HS-258) (See Model 5C1) 116

5C3 (Ch. HS-262) (See Model 5C1) 116

5C4 (Ch. HS-270) (See Model 5C1) 116

5C5 (Ch. HS-271) (See Model 5C1) 116

5C6 (Ch. HS-272) (See Model 5C1) 116

5H11U, 5H12U, 5H13U (Ch. HS-244) 117—9

5J1 (Ch. HS-250), 5J1U (Ch. HS-224) 100—7

5J2 (Ch. HS-250), a 5J2U (Ch. HS-224) (See Model 5J1) 100

5L1 (Ch. HS-250), 5L1U (Ch. HS-224) (See Model 5J1) 100

5L2 (Ch. HS-250), 5L2U (Ch. HS-224) (See Model 5J1) 100

5M1, 5M1U, 5M2, 5M2U (Ch. HS-249, HS-223) 101—7

5R11A, 5R12A, 5R13A, 5R14A, 5R15A, 5R16A (Ch. HS-280) (See Model 5R11U) 115

MOTOROLA—Cont.

5R11U, 5R12U, 5R13U, 5R14U, 5R15U, 5R16U (Ch. HS-249) 115—6

5X11U, 5X12U, 5X13U (Ch. HS-243) 114—7

5X21U, 5X22U, 5X23U (Ch. HS-259) 120—9

6F11, 6F1B (Ch. HS-264) 117—10

6L1, 6L2 (Ch. HS-226) 102—7

6X11U, 6X12U (Ch. HS-245) 112—5

7F11, 7F1B (Ch. HS-265) 113—5

7V1, 7V2, 7V5 (Ch. TS-18) Tel. Rec. 83—6

8FDT, 8GMT (See Ch. 8A) 46

8FM21, 8FM21B (Ch. HS-247) 121—9

9FM21, 9FM21B (Ch. HS-246) 114—8

9T1 (Ch. TS-18, A) Tel. Rec. (See Model 7V11) 83

9V11, 9V15 (Ch. TS-18, A) Tel. Rec. (See Model 7V11) 83

10T2 (Ch. TS-14B) Tel. Rec. 92—4

10V9P (Ch. TS-9E, TS-9E1) Tel. Rec. (See Models VK106, Ch. TS-9E) 77

10VK12 (Ch. TS14, A, B) Tel. Rec. (See Model 10T2) 92

10VK22 (Ch. TS14, A, B) Tel. Rec. (See Model 10T2) 92

10V73 (Ch. TS-9E, TS-9E1) Tel. Rec. (See Model VK106) 77

10V710 (Ch. TS14, A, B) Tel. Rec. (See Model 10T2) 92

10V724 (Ch. TS14, A, B) Tel. Rec. (See Model 10T2) 92

12K1, B (Ch. TS-23B) Tel. Rec. (See Model 10T2) 92

12K2, B (Ch. TS-23B) Tel. Rec. (See Model 10T2) 92

12K2 (Ch. TS-53) Tel. Rec. (See Model 10T2) 92

12T1, B (Ch. TS-23B) Tel. Rec. (See Model 10T2) 92

12T3 (Ch. TS-53) Tel. Rec. (See Model 12K2) 115

12VF4B, R, R-C, TS-23, A, R-C (Ch. HS-190) Tel. Rec. (See Model 10T2) 92

12VF26B, B-C, R, R-C (Ch. TS-23A, B and Radio Ch. HS-190A) Tel. Rec. (See Model 10T2) 92

12VK11 (Ch. TS-23, A, B) Tel. Rec. (See Model 10T2) 92

12VK15 (Ch. TS-30, A) Tel. Rec. (Also Prod. Chge. Bul. 5-Set 106-1) 93—7

12VK18B, 12VK18R (Ch. TS-15C, TS-15C1) Tel. Rec. (See Model VK106, Ch. TS-9E) 77

12VT13 (Ch. TS-23, A, B) Tel. Rec. (See Model 10T2) 92

12VT16, 12VT16B, 12VT16R (Ch. TS-15C, TS-15C1) (See Model VK106, Ch. TS-9E) 77

14K1, B (Ch. TS-88) Tel. Rec. 112—6

14K1BH, 14K1H (Ch. TS-115) Tel. Rec. 121—10

14F1B (Ch. TS-216) Tel. Rec. (See Model 14T4) 158

14P2, 14P2U (Ch. TS-275) Tel. Rec. 174—9

14T1, B (Ch. TS-88) Tel. Rec. (See Model 14K1) 112

14T3 (Ch. TS-114) Tel. Rec. (See Model 14K1BH) 121

14T3X1 (Ch. TS-114A) Tel. Rec. (See Model 14K1BH) 121

14T4, B (Ch. TS-216) Tel. Rec. 158—8

16F1 (Ch. TS-60 & Radio Ch. HS-234) Tel. Rec. 102—8

16F1BH, 16F1H (Ch. TS-89 & Radio Ch. HS-234) Tel. Rec. (See Model 14K1BH) 121

16K2L, L-B (Ch. TS-52) Tel. Rec. 93A-10

16K2 (Ch. TS-74) Tel. Rec. (See Model 16F1) 102

16K2BH, 16K2H (Ch. TS-94) Tel. Rec. (See Model 14K1BH) 121

16T1 (Ch. TS-60) Tel. Rec. (See Model 16F1) 102

16T1BH, 16T1H (Ch. TS-89) Tel. Rec. (See Model 14K1BH) 121

16VF8B, R (Ch. TS-16, A and Radio Ch. HS-211) Tel. Rec. (See Model 12VK15) (Also see Prod. Chge. Bul. 5-Set 106-1) 93

16VK1 (Ch. TS-32) Tel. Rec. (See Model 16K2) 93A

16VK7 (Ch. TS-16, A) Tel. Rec. (See Model 12VK15) (Also Prod. Chge. Bul. 5-Set 106-1) 93

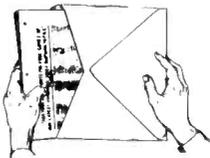
17F1 (Ch. TS-118 & Radio Ch. HS-253) Tel. Rec. (See Model 14K1BH) 121

IMPORTANT

Quick, Easy PHOTOFACT Filing Method

The preferred 30-Second method for filing PHOTOFACT folders

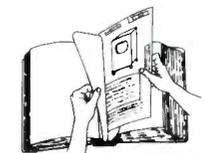
Your PHOTOFACT Folder Sets come to you in convenient envelopes. When you remove a Set from its envelope, you will find the Folders already arranged in proper filing order, and preceded by an Index Separator. This Separator lists each receiver covered in the Set, and has an index tab showing the Set number. To file, here's all you do:



1. Remove the Index Separator and the Folders from the envelope. The Folders and manila TV Jackets are already arranged in proper numerical filing order except the TV folders, which are placed last in the Set.



2. Open your binder and place the entire contents, taken from the envelope, behind the preceding Set of folders, laying aside the TV folders.



3. Now, insert the TV folders in their respective manila jackets and your filing is complete.

To locate the folder you want, refer to instructions on the first page of this index listing.

ALWAYS REFER TO THE PHOTOFACT INDEX

NOW *Electro-Voice*

... AND ADDS THE



MODEL 3002-A

NEW *improved* VHF BOOSTERS

New Multi-Power *Tune-o-Matic*

Now provides *extra* gain on all VHF channels, through *Multi-Power* 3-tube low-noise broadband circuit. Automatic—*no separate manual booster tuning*. Turns "on" or "off" with TV receiver switch. No signal drift—no limiting peaks. *Properly balances picture and sound*. Hi-Lo Gain Switch permits reducing gain, if desired. Designed for all-band or separate high and low band antennas. Quality-built by the *originators* of broadband automatic boosters.

Model 3002-A 3-tube VHF Booster. List, \$39.50

Set-mounted automatic booster for extreme fringe areas where absolute maximum gain is required.

Model 3000 4-tube VHF Booster. List, \$57.50

New Multi-Power *Tenna-Top*

Mounts at the antenna ahead of the lead-in—boosts TV signals, not local lead-in noise. New *Multi-Power* 3-tube low-noise broadband circuit gives *more all-channel gain*. This provides even higher signal-to-overall-noise ratio. Gets amazing results in tough fringe areas or any noisy location. Fully automatic on all VHF channels—*no separate booster tuning*. Turned "on" or "off" by TV receiver switch. Built-in tapped transformer *permits operation up to 3000 feet* with high quality lead-in. Junction Control Box placed at TV set has Hi-Lo Gain Switch. Can be used with all-band or separate high and low band antennas—also with antenna rotator. Installation is *simple and economical*. Single Twin-Lead line carries power up and signal down. Extra-rugged—insures trouble-free service.

Model 3012-A 3-tube VHF Booster. List, \$59.50

Antenna-mounted automatic booster where absolute maximum gain is required.

Model 3010 4-tube VHF Booster. List, \$88.00



MODEL 3012-A

E-V Pat. Pend.

ELECTRO-VOICE, INC., 423 CARROLL ST. • BUCHANAN, MICHIGAN

Export: 13 East 40th Street, New York 16, U.S.A. Cables: Arlab

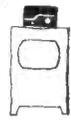
GIVES YOU BOTH!

MAGIC TOUCH TO YOUR TV SELLING

NEW all-channel UHF CONVERTER



MODEL 3300 UHF CONVERTER
Looks Handsome on Any TV Set



ADDS ALL UHF CHANNELS TO VHF SETS

E-V Magic-Touch Tuning Assures Picture Precision

You're all set for UHF with the new electronic E-V Converter. Research-engineered by *Electro-Voice*, and field-proved. Installation is quick and easy—connects to antenna input of VHF TV set and just plugs in. *Non-slip micrometer type tuning mechanism* provides smooth, continuous tuning of all UHF channels 14-83. No band switches, strips or coils. Operates with either separate UHF and VHF antennas or on all-channel (2-83) antenna. *One control* turns Converter "on" or "off," and switches to correct antenna. Utilizes channels 5 or 6 of VHF TV set as IF. Does not affect VHF reception. Housed in smart dark brown cabinet. Size 7 3/4" wide, 5 1/4" high, 6 1/4" deep.

Model 3300 UHF Converter. Complete, ready for installation.
List Price, **\$49.50**

Your Future in TV is Linked with E-V

The forward-looking program of research and development at *Electro-Voice* is an index of "new things to come." It is reflected in the major contributions E-V has made to the audio and video fields—and in the wide use of E-V quality products in both Tele-casting and TV reception, in Broadcasting, Communications, High Fidelity Sound Reproduction, and related fields.

Send now for
New Bulletin No. 182

Electro-Voice INC.

TV PRODUCTS • HI-FI SPEAKER SYSTEMS • PHONO-CARTRIDGES • MICROPHONES • PA PROJECTORS

MOTOROLA—Cont.

17F1A (Ch. TS-89 & Radio Ch. HS-253) Tel. Rec. (See Model 14K1BH) 121

17F1B (Ch. TS-118 & Radio Ch. HS-253) Tel. Rec. (See Model 14K1BH) 121

17F1BA (Ch. TS-89 & Radio Ch. HS-253) Tel. Rec. (See Model 14K1BH) 121

17F2W (Ch. TS-118 & Radio Ch. HS-253) Tel. Rec. (See Model 14K1BH) 121

17F2WA (Ch. TS-89 & Radio Ch. HS-253) Tel. Rec. (See Model 14K1BH) 121

17F3B (Ch. TS-118 & Radio Ch. HS-253) Tel. Rec. (See Model 14K1BH) 121

17F3BA (Ch. TS-89 & Radio Ch. HS-253) Tel. Rec. (See Model 14K1BH) 121

17F4 (Ch. TS-118 & Radio Ch. HS-253) Tel. Rec. (See Model 14K1BH) 121

17F4A (Ch. TS-89 & Radio Ch. HS-253) Tel. Rec. (See Model 14K1BH) 121

17F5, 17F5B (Ch. TS-118 & Radio Ch. HS-261) Tel. Rec. (See Model 14K1BH) 121

17F5A, 17F5BA (Ch. TS-89 & Radio Ch. HS-261) Tel. Rec. (See Model 14K1BH) 121

17F6, B (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17F6BC, C (Ch. TS-174 & Radio Ch. HS-253) Tel. Rec. (See Model 14K1BH) 121

17F7B (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17F7BC (Ch. TS-174 and Radio Ch. HS-253) Tel. Rec. (See Model 14K1BH) 121

17F8 (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17F8C (Ch. TS-174) Tel. Rec. (See Model 14K1BH) 121

17F9, B (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17F9BC, C (Ch. TS-174 and Radio Ch. HS-261) Tel. Rec. (See Model 14K1BH) 121

17F11 (Ch. TS-228 and Radio Ch. HS-302) Tel. Rec. (See Model 14K1BH) 165-7

17F12, A, B, BA (Ch. TS-325, A, 326, A, and Radio Ch. HS-319) Tel. Rec. (See Model 14K1BH) 171-8

17F12D (Ch. TS-401) Tel. Rec. (For TV Chassis see Model 21F1) [Also see Prod. Chge. Bul. 49-Set 183-1] 173

17F13, B (Ch. TS-395A, -02 and Radio Ch. HS-319) (For Radio Ch. See 171-8) 192-6

17K1A, 17K1BA (Ch. TS-95) Tel. Rec. (See Model 14K1BH) 121

17K1BE, 17K1E (Ch. TS-172) Tel. Rec. (See Model 14K1BH) 121

17K2BE, 17K2E (Ch. TS-172) Tel. Rec. (See Model 14K1BH) 121

17K3, 17K3B (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17K3A, 17K3BA (Ch. TS-89) Tel. Rec. (See Model 14K1BH) 121

17K4A (Ch. TS-95) Tel. Rec. (See Model 14K1BH) 121

17K4E (Ch. TS-172) Tel. Rec. (See Model 14K1BH) 121

17K5 (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17K5C (Ch. TS-174) Tel. Rec. (See Model 14K1BH) 121

17K5E (Ch. TS-221-A) Tel. Rec. 159-10

17K6 (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17K6C (Ch. TS-174) Tel. Rec. (See Model 14K1BH) 121

17K7, B (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17K7BC, C (Ch. TS-174) Tel. Rec. (See Model 14K1BH) 121

17K8, B (Ch. TS-236) Tel. Rec. 152-4A

17K8A, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K9, B (Ch. TS-220) Tel. Rec. (See Model 17K5E) 159

17K9A, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

MOTOROLA—Cont.

17K9BC (Ch. TS-221, -A) Tel. Rec. (See Model 17K5E) 159

17K10, M (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K10A (Ch. TS-174) Tel. Rec. (See Model 14K1BH) 121

17K10E (Ch. TS-314A, B) Tel. Rec. (See Model 17F11) 167-13

17K11, B, C (Ch. TS-236) Tel. Rec. (See Model 17K8) 152-4A

17K11A, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K12, A, B, BA, W, WA (Ch. TS-325, A, 326, A) Tel. Rec. (See Model 17F12) 171

17K13A (Ch. TS-326A, B) Tel. Rec. (See Model 17F12) 171

17K13D (Ch. TS-401) Tel. Rec. (See Model 21F1) [Also see Prod. Chge. Bul. 49-Set 183-1] 173

17K14, A, B, W (Ch. TS-395A, 02) Tel. Rec. (See Model 17F13) 192

17K15, B (Ch. TS-395A, -02) Tel. Rec. (See Model 17F13) 192

17K16 (Ch. TS-395A, -02) Tel. Rec. (See Model 17F13) 192

17K17, 17K17B (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17K17A, 17K17BA (Ch. TS-89) Tel. Rec. (See Model 14K1BH) 121

17K17C, 17K17CA (Ch. TS-89) Tel. Rec. (See Model 14K1BH) 121

17K17D, 17K17DA (Ch. TS-89) Tel. Rec. (See Model 14K1BH) 121

17K17E (Ch. TS-221, -A) Tel. Rec. (See Model 17K5E) 159

17K17F, 17K17FA (Ch. TS-118A, B) Tel. Rec. (See Model 14K1BH) 121

17K17G (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17K17H (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17K17I (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17K17J (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17K17K (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17K17L (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17K17M (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17K17N (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17K17O (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17K17P (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17K17Q (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17K17R (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17K17S (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17K17T (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17K17U (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17K17V (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17K17W (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17K17X (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17K17Y (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17K17Z (Ch. TS-118) Tel. Rec. (See Model 14K1BH) 121

17K18, B (Ch. TS-236) Tel. Rec. (See Model 17F11) 165

17K18A, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K18B, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K18C, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K18D, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K18E, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K18F, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K18G, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K18H, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K18I, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K18J, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K18K, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K18L, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K18M, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K18N, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K18O, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K18P, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K18Q, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K18R, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K18S, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K18T, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K18U, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K18V, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K18W, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K18X, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K18Y, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

17K18Z, BA (Ch. TS-228) Tel. Rec. (See Model 17F11) 165

MOTOROLA—Cont.

17T10 (Ch. TS-325B) Tel. Rec. (See Model 17F12) 171

17T10A (Ch. TS-326A, B) Tel. Rec. (See Model 17F12) 171

17T10D (Ch. TS-401) Tel. Rec. (See Model 21F1) [Also see Prod. Chge. Bul. 49-Set 183-1] 173

17T11 (Ch. TS-395, -02) Tel. Rec. (See Model 17F13) 192

17T12, B, W (Ch. TS-395A, -02) (See Model 17F13) 192

17T13 (Ch. TS-410A) Tel. Rec. (See Model 17T11E) 194

19F1 (Ch. TS-67, A and Radio Ch. HS-230) Tel. Rec. (See Model 19K1) (Ch. TS-67, A) Tel. Rec. (See Model 19F1) 111

19K2, 19K2B (Ch. TS-101) Tel. Rec. (See Model 19K2) 122-5

19K2E, B (Ch. TS-119, A) Tel. Rec. (See Model 19K2) [Also see Prod. Chge. Bul. 53-Set 187-1] 122

19K3, 19K4, 19K4B (Ch. TS-101) Tel. Rec. (See Model 19K2) 122

20F1, B (Ch. TS-119, A and Radio Ch. HS-230) Tel. Rec. (See Model 19K2) [Also see Prod. Chge. Bul. 53-Set 187-1] 122

20F2, B (Ch. TS-119, A and Radio Ch. HS-230) Tel. Rec. (See Model 19K2) [Also see Prod. Chge. Bul. 53-Set 187-1] 122

20K1, B, 20K2 (Ch. TS-119, B, C) Tel. Rec. (See Model 19K2) [Also see Prod. Chge. Bul. 53-Set 187-1] 122

20K3, B, 20K4, B (Ch. TS-119, C, D) (See Model 19K2) [Also see Prod. Chge. Bul. 53-Set 187-1] 122

20K6, 20K6B (Ch. TS-307) Tel. Rec. (See Model 20K6) 183-9

20T1, B, 20T2, B (Ch. TS-119, B, C) (See Model 19K2) [Also see Prod. Chge. Bul. 53-Set 187-1] 122

20T2A, 20T2AB (Ch. TS-307) Tel. Rec. (See Model 20K6) 183

20T2A, 20T2BA (Ch. TS-307) Tel. Rec. (See Model 20K6) 183

20T3, 20T3B (Ch. TS-307) Tel. Rec. (See Model 20K6) 183

21C1, B (Ch. TS-292A, B) Tel. Rec. (Also See Prod. Chge. Bul. 63-Set 197-1) 191-13

21F1, B (Ch. TS-351, A and Radio Ch. HS-316) Tel. Rec. (See Model 21F1) 173-9

21F2, B, 21F3, B (Ch. TS-292A, B and Radio Ch. HS-316) Tel. Rec. (For TV Ch. See Prod. Chge. Bul. 63-Set 197-1 and Set 191-13, For Radio Ch. See Model 21F1) 173-9

21K1, B (Ch. TS-351) Tel. Rec. (See Model 21F1) 173

21K2, B (Ch. TS-351) Tel. Rec. (See Model 21F1) 173

21K3, B, W (Ch. TS-351B) Tel. Rec. (See Model 21F1) 173

21K4, A, B, W (Ch. TS-292A, B) Tel. Rec. (Also See Prod. Chge. Bul. 63-Set 197-1) 191-13

21K5, B, 21K6, 21K7 (Ch. TS-292A, B) Tel. Rec. (Also See Prod. Chge. Bul. 63-Set 197-1) 191-13

21T1, B (Ch. TS-351) Tel. Rec. (See Model 21F1) 173

21T2, B (Ch. TS-351) Tel. Rec. (See Model 21F1) 173

MOTOROLA—Cont.

21T3 (Ch. TS-501A, B) Tel. Rec. (Also See Prod. Chge. Bul. 63-Set 197-1) 191-13

21T4A, EA, 21T5A, BA (Ch. TS-324A, B) Tel. Rec. (Also See Prod. Chge. Bul. 63-Set 197-1) 191-13

21T5A, 21T5BA (Ch. TS-324) Tel. Rec. (Also See Prod. Chge. Bul. 63-Set 197-1) 191-14

42B1 (Ch. HS-306) 191-14

45B12 (Ch. HS-8) 9-23

47B11 (Ch. HS-72) 29-17

48L11 (Ch. HS-113) 47-13

49L11Q, 49L13Q (Ch. HS-183) 77-7

51C1, 51C2, 51C3, 51C4 (Ch. HS-288) (See Model 5C1) 116

51L1U, 51L2U (Ch. HS-224) (See Model 5J1) 100

51M1U, 51M2U (Ch. HS-282) 149-8

52B1U (Ch. HS-305) 190-10

52C1 (Ch. HS-309) 191-15

52C6, 52C7, 52C8 (Ch. HS-310) 177-10

52CW1, 52CW2, 52CW3, 52CW4 (Ch. HS-329) 198-10

52H1U, 52H1UQ, 52H13U, 52H14U (Ch. HS-313) 176-6

52L1, A, 52L2, A, 52L3, A (Ch. HS-327, HS-357) 190-11

52H1U, 52H1UQ, 52H13U, 52H14U, 52H15U, 52H16 (Ch. HS-289) 188-11

52R11A, 52R12A, 52R13A, 52R14A, 52R15A, 52R16 (Ch. HS-116) 49-14

52R17A, 52R18A, 52R19A, 52R20A, 52R21A, 52R22A, 52R23A, 52R24A, 52R25A, 52R26A, 52R27A, 52R28A, 52R29A, 52R30A, 52R31A, 52R32A, 52R33A, 52R34A, 52R35A, 52R36A, 52R37A, 52R38A, 52R39A, 52R40A, 52R41A, 52R42A, 52R43A, 52R44A, 52R45A, 52R46A, 52R47A, 52R48A, 52R49A, 52R50A, 52R51A, 52R52A, 52R53A, 52R54A, 52R55A, 52R56A, 52R57A, 52R58A, 52R59A, 52R60A, 52R61A, 52R62A, 52R63A, 52R64A, 52R65A, 52R66A, 52R67A, 52R68A, 52R69A, 52R70A, 52R71A, 52R72A, 52R73A, 52R74A, 52R75A, 52R76A, 52R77A, 52R78A, 52R79A, 52R80A, 52R81A, 52R82A, 52R83A, 52R84A, 52R85A, 52R86A, 52R87A, 52R88A, 52R89A, 52R90A, 52R91A, 52R92A, 52R93A, 52R94A, 52R95A, 52R96A, 52R97A, 52R98A, 52R99A, 52R100A (Ch. HS-116) 49-14

58G11, 58G12 (Ch. HS-160) 64-8

58L11 (Ch. HS-114) 45-17

58R11, 58R12, 58R13, 58R14, 58R15, 58R16 (Ch. HS-116) 49-14

58R17A, 58R18A, 58R19A, 58R20A, 58R21A, 58R22A, 58R23A, 58R24A, 58R25A, 58R26A, 58R27A, 58R28A, 58R29A, 58R30A, 58R31A, 58R32A, 58R33A, 58R34A, 58R35A, 58R36A, 58R37A, 58R38A, 58R39A, 58R40A, 58R41A, 58R42A, 58R43A, 58R44A, 58R45A, 58R46A, 58R47A, 58R48A, 58R49A, 58R50A, 58R51A, 58R52A, 58R53A, 58R54A, 58R55A, 58R56A, 58R57A, 58R58A, 58R59A, 58R60A, 58R61A, 58R62A, 58R63A, 58R64A, 58R65A, 58R66A, 58R67A, 58R68A, 58R69A, 58R70A, 58R71A, 58R72A, 58R73A, 58R74A, 58R75A, 58R76A, 58R77A, 58R78A, 58R79A, 58R80A, 58R81A, 58R82A, 58R83A, 58R84A, 58R85A, 58R86A, 58R87A, 58R88A, 58R89A, 58R90A, 58R91A, 58R92A, 58R93A, 58R94A, 58R95A, 58R96A, 58R97A, 58R98A, 58R99A, 58R100A (Ch. HS-116) 49-14

59F11 (Ch. HS-188) 68-12

59H1U, 59H12U (Ch. HS-210) 97-9

59L1Q, 59L2Q, 59L14Q (Ch. HS-187) 78-10

59R11, 59R12, 59R13M, 59R14E, 59R15G, 59R16Y (Ch. HS-167) 79-10

59X11, 59X12 (Ch. HS-180) 81-11

59X21U, 59X22U (Ch. HS-192) 98-6

61L1, 61L2 (Ch. HS-226) (See Model 6L1) 102

62C1, 62C2, 62C3 (Ch. HS-299) 189-12

62CW1 (Ch. HS-324) 196-7

62L1U, 62L2U, 62L3U (Ch. HS-308) 183-10

62X1U, 62X12U, 62X13U (Ch. HS-314) 175-14

65F11 (Ch. HS-31) 6-19

65F12 (See Model 65F11) 6

65F21 (Ch. HS-26) 4-12

65L11, 65L12 (Ch. HS-7) 8-22

65T21, 65T2B (Ch. HS-32) 1-1

65X11A, 65X12A, 65X13A, 65X14A, 65X15A, 65X16A, 65X17A, 65X18A, 65X19A, 65X20A, 65X21A, 65X22A, 65X23A, 65X24A, 65X25A, 65X26A, 65X27A, 65X28A, 65X29A, 65X30A, 65X31A, 65X32A, 65X33A, 65X34A, 65X35A, 65X36A, 65X37A, 65X38A, 65X39A, 65X40A, 65X41A, 65X42A, 65X43A, 65X44A, 65X45A, 65X46A, 65X47A, 65X48A, 65X49A, 65X50A, 65X51A, 65X52A, 65X53A, 65X54A, 65X55A, 65X56A, 65X57A, 65X58A, 65X59A, 65X60A, 65X61A, 65X62A, 65X63A, 65X64A, 65X65A, 65X66A, 65X67A, 65X68A, 65X69A, 65X70A, 65X71A, 65X72A, 65X73A, 65X74A, 65X75A, 65X76A, 65X77A, 65X78A, 65X79A, 65X80A, 65X81A, 65X82A, 65X83A, 65X84A, 65X85A, 65X86A, 65X87A, 65X88A, 65X89A, 65X90A, 65X91A, 65X92A, 65X93A, 65X94A, 65X95A, 65X96A, 65X97A, 65X98A, 65X99A, 65X100A (Ch. HS-31) 1-1

67F11, 67F12, 67F12B, 67F13 (Ch. HS-63) 31-20

67F14 (Ch. HS-122) 55-15

67F16B (Ch. HS-69) 44-14

67L11 (Ch. HS-59) 31-21

67X11, 67X12, 67X13 (Ch. HS-58) 30-20

67XM21 (Ch. HS-64) 32-14

68F11, 68F12, 68F14, 68F14B, 68F14M, 68F15 (Ch. HS-119) 45-18

68T11 (Ch. HS-144) 54-14

68X11, 68X12 (Ch. HS-127), 68X11A, 68X12A (Ch. HS-127A) 56-16

MOTOROLA—Cont.

69L11 (Ch. HS-175) 76-15

69X11, 69X12 (Ch. HS-18) 82-9

72X11 (Ch. HS-303) 176-7

75F1 (Ch. HS-91) 19-21

75F13 (Ch. HS-36) 29-18

75F31A, B (Ch. HS-36A), 75F31 (Ch. HS-98) 29-18

77FM21 (Ch. HS-89) 33-13

77FM22, 77FM22A, 77FM22WA, 77FM23 (Ch. HS-97) 33-13

77XM21, 77XM22, 77XM22B (Ch. HS-102) 34-12

78F1, 78F11M (Ch. HS-150), 78F12M (Ch. HS-153) 56-17

78FM21, 78FM21M (Ch. HS-132), 78FM22M (Ch. HS-128) 59-13

79FM21, 79FM21B, 79FM21R (Ch. HS-178) 88-7

79XM21 (Ch. HS-168) 85-9

85F21 (Ch. HS-22) 6-20

85K21 (Ch. HS-52) 5-3

88FM21 (Ch. HS-133) 54-15

91FM21 (Ch. HS-230A) (See Model 19F1) 111

92FM21, A, B, BA (Ch. 316A) (See Model 21F1) 173

95F31, 95F31B (Ch. HS-39) 19-22

95F33 (Ch. HS-38) 80-20

99FM21R (Ch. HS-170) 13-10

107F31, 107F31B, (Ch. HS-87) 33-14

309 63-14

52R11, 52R12, 52R13, 400 99-10

401 131-12

401A 179-8

405 (Ch. AS-13) 21-25

408 38-12

409 (See Model 408) 38

500 98-7

501 133-10

501A 148-12

505 (Ch. AS-14) 4-37

508 308

509 (See Model 508) 39

600 (Ch. HS-158) 52-13

58G11, 58G12 (Ch. HS-160) 64-8

58L11 (Ch. HS-114) 45-17

58R11, 58R12, 58R13, 58R14, 58R15, 58R16 (Ch. HS-116) 49-14

58R17A, 58R18A, 58R19A, 58R20A, 58R21A, 58R22A, 58R23A, 58R24A, 58R25A, 58R26A, 58R27A, 58R28A, 58R29A, 58R30A, 58R31A, 58R32A, 58R33A, 58R34A, 58R35A, 58R36A, 58R37A, 58R38A, 58R39A, 58R40A, 58R41A, 58R42A, 58R43A, 58R44A, 58R45A, 58R46A, 58R47A, 58R48A, 58R49A, 58R50A, 58R51A, 58R52A, 58R53A, 58R54A, 58R55A, 58R56A, 58R57A, 58R58A, 58R59A, 58R60A, 58R61A, 58R62A, 58R63A, 58R64A, 58R65A, 58R66A, 58R67A, 58R68A, 58R69A, 58R70A, 58R71A, 58R72A, 58R73A, 58R74A, 58R75A, 58R76A, 58R77A, 58R78A, 58R79A, 58R80A, 58R81A, 58R82A, 58R83A, 58R84A, 58R85A, 58R86A, 58R87A, 58R88A, 58R89A, 58R90A, 58R91A, 58R92A, 58R93A, 58R94A, 5

MOTOROLA-Cont.

Ch. HS-89 (See Model 77FM21) 33

Ch. HS-91 (See Model 75F21) 19

Ch. HS-94 (See Model 56X11) 28

Ch. HS-97 (See Model 77FM22) 33

Ch. HS-98 (See Model 76F31) 29

Ch. HS-102 (See Model 77XM21) 34

Ch. HS-108 (See Model VK-101) 51

Ch. HS-113 (See Model 48L11) 47

Ch. HS-114 (See Model 58L11) 45

Ch. HS-116 (See Model 58R11) 49

Ch. HS-119 (See Model 68L11) 45

Ch. HS-122 (See Model 67F14) 55

Ch. HS-124 (See Model 68F11) 58

Ch. HS-125 (See Model 58X11) 53

Ch. HS-127 (See Model 68X11) 56

Ch. HS-127A (See Model 68X11A) 56

Ch. HS-128 (See Model 78FM22M) 59

Ch. HS-132 (See Model 78FM21) 59

Ch. HS-133 (See Model 88FM21) 54

Ch. HS-137 (See Model VK101) 51

Ch. HS-144 (See Model 68T11) 54

Ch. HS-150 (See Model 78F11) 56

Ch. HS-155 (See Model 78F12M) 56

Ch. HS-158 (See Model 58A11) 52

Ch. HS-160 (See Model 58G11) 64

Ch. HS-167 (See Model 59R11) 79

Ch. HS-168 (See Model 79XM21) 85

Ch. HS-170 (See Model 99FM21R) 80

Ch. HS-175 (See Model 69L11) 76

Ch. HS-178 (See Model 79FM21) 88

Ch. HS-180 (See Model 59X11) 81

Ch. HS-181 (See Model 69X11) 82

Ch. HS-183 (See Model 49L11Q) 77

Ch. HS-184 (See Model 58R11A) 69

Ch. HS-187 (See Model 59L11Q) 78

Ch. HS-188 (See Model 59F11) 68

Ch. HS-192 (See Model 59X21U) 98

Ch. HS-210 (See Model 59H11U) 97

Ch. HS-223 (See Model 5M11) 101

Ch. HS-224 (See Model 5J11) 100

Ch. HS-226 (See Model 6L11) 102

Ch. HS-228 (See Model 5C11) 116

Ch. HS-230 (See Model 19F11) 111

Ch. HS-234 (See Model 16F11) 102

Ch. HS-242 (See Model 5R11U) 115

Ch. HS-243 (See Model 5X11U) 114

Ch. HS-244 (See Model 5H11U) 117

Ch. HS-245 (See Model 6X11U) 112

Ch. HS-246 (See Model 9FM21) 114

Ch. HS-247 (See Model 9FM21) 121

Ch. HS-249 (See Model 5M11) 101

Ch. HS-250 (See Model 5J11) 100

Ch. HS-253 (See Model 17F11) 121

Ch. HS-258 (See Model 5C11) 116

Ch. HS-259 (See Model 5X21U) 120

Ch. HS-261 (See Model 17F51) 121

Ch. HS-262 (See Model 5C11) 116

Ch. HS-264 (See Model 6F11) 117

Ch. HS-265 (See Model 7F11) 113

Ch. HS-270 (See Model 5C11) 116

Ch. HS-271, HS-272 (See Model 5C11) 116

Ch. HS-283 (See Model 51M1U) 149

Ch. HS-289 (See Model 52R11) 188

Ch. HS-299 (See Model 62C11) 189

Ch. HS-300 (See Model 52M1U) 188

Ch. HS-302 (See Model 17F11) 165

Ch. HS-303 (See Model 72XM21) 176

Ch. HS-305 (See Model 52B1U) 190

MOTOROLA-Cont.

Ch. HS-306 (See Model 42B1) 191

Ch. HS-308 (See Model 62L1U) 183

Ch. HS-309 (See Model 52C1) 191

Ch. HS-310 (See Model 52C4) 177

Ch. HS-313 (See Model 52H11U) 176

Ch. HS-314 (See Model 62X11U) 175

Ch. HS-315 (See Model 52R11U) 177

Ch. HS-316, A (See Model 21F1) 173

Ch. 317 (See Model 52R11A) 178

Ch. HS-319 (See Model 17F12) 171

Ch. HS-324 196-7

Ch. HS-327 (See Model 52L1) 190

Ch. HS-329 198-10

Ch. HS-357 (See Model 52L1) 190

Ch. M-5 (See Model AR96-23) 11

Ch. OB (See Model SROB) 105

Ch. P6-2 197-7

Ch. P8-2 197-7

Ch. TS-3 (See Model VK-101) 51

Ch. TS-7 (See Model VK101) 51

Ch. TS-8 (See Model VF103) 73

Ch. TS-9, TS-9A, TS-9B, TS-9C (See Model VT105) 67

Ch. TS-9D (See Model VT105 Photofact Servicer) 82

Ch. TS-9D1 *

Ch. TS-9E, TS-9E1 (See Model VK106) 77

Ch. TS-14, A, B (See Model 10T2) 92

Ch. TS-15 (See Model VT121) 91A

Ch. TS-15C, TS-15C1 (See Model 12VK18B) 77

Ch. TS-16, A (See Model 12VK15) 93

Ch. TS-18, A (See Model 7V11) 83

Ch. TS-23, A, B (See Model 10T2) 92

Ch. TS-30, A (See Model 12VK15) 93

Ch. TS-52 (See Model 16K2) 93A

Ch. TS-53 (See Model 12K2) 115

Ch. TS-60 (See Model 16F1) 102

Ch. TS-67 (See Model 19F1) 111

Ch. TS-74 (See Model 16F1) 102

Ch. TS-88 (See Model 14K1) 112

Ch. TS-89 (See Model 16F1BH) 121

Ch. TS-94 (See Model 16K2BH) 121

Ch. TS-95 (See Model 17K1A) 121

Ch. TS-101 (See Model 19K2) 122

Ch. TS-114 (See Model 14T3) 121

Ch. TS-114A (See Model 14T3X1) 121

Ch. TS-115 (See Model 14K1BH) 121

Ch. TS-118 (See Model 14K1BH) 121

Ch. TS-118A, B (See Model 17T3X1) 121

Ch. TS-119, A, B, C, D (See Model 19K2) 122

Ch. TS-172 (See Model 14K1BH) 121

Ch. TS-174 (See Model 14K1BH) 121

Ch. TS-214 (See Model 17T3A) 165

Ch. TS-216 (See Model 14T4) 158

MOTOROLA-Cont.

Ch. TS-220 (See Model 17K9) 159

Ch. TS-221, A (See Model 17K5E) 159

Ch. TS-228 (See Model 17F11) 165

Ch. TS-236 (See Model 17K8) 152-4A

Ch. TS-275 (See Model 14P2) 174

Ch. TS-292, A, B (See Model 21C1) 183

Ch. TS-307 (See Model 20K6) 163

Ch. TS-314A, B, TS-315A, B (See Model 17K10E) 167

Ch. TS-324, A, B (See Model 21T4A) 178

Ch. TS-325, A, TS-326, A (See Model 17F12) 171

Ch. TS-351, A, B (See Model 21T4) 173

Ch. TS-395, 02 (See Model 17F13) 192

Ch. TS-400A (See Model 17T11E) 194

Ch. TS-401 (See Model 17F12D) 173

Ch. TS-410A (See Model 17T13) 194

Ch. TS-501A (See Model 21T3) 134-8

Ch. 1A 136-11

Ch. 1B 197-7

Ch. 2M 197-7

Ch. 8A 46-16

Ch. 10A 106-10

MUNTZ

M30 (Ch. TV-16A1) Tel. Rec. (See Model 10B-8) 108-8

M31 (Ch. TV-16A2) Tel. Rec. (See Model M31) 108

M31 (Ch. TV-17A2) Tel. Rec. (See Model M31) 116-10

M31R (Ch. TV17A3) Tel. Rec. (See Model M31) 116

M31R, M32 (Ch. TV-16A3) Tel. Rec. (See Model M30) 108

M32 (Ch. TV17A2) Tel. Rec. (See Model M31) 116

M32, M32R (Ch. TV17A3) Tel. Rec. (See Model M31) 116

M32 (Ch. TV17A4) Tel. Rec. (See Model M31) 116

M33 (Ch. TV17A4) Tel. Rec. (See Model M31) 116

M34 (Ch. TV-17A4) Tel. Rec. (For Tel. Rec. Chassis See Model M31) 116

M41, M42 (Ch. TV17A3A) Tel. Rec. (See Model M31) 116

M46 (Ch. TV17A7) Tel. Rec. (See Model M31) 116

M49 (Ch. TV17A7) Tel. Rec. (See Model M31) 116

M-158 Tel. Rec. 97A-10

M-159 Tel. Rec. 97A-10

M-159A, B Tel. Rec. 97A-10

M-169 Tel. Rec. 96-6

1750, 1751, 1752 (Ch. 17A3A) Tel. Rec. (See Model M31) (Also see Prod. Chge. Bul. 33, Set 159-3) 116

2053 (Ch. 17A7) Tel. Rec. (See Model M31) (Also see Prod. Chge. Bul. 33, Set 159-3) 116

2053A (Ch. 17B1, 17B2) Tel. Rec. (See Ch. 17B1) 163

2054 (Ch. 17A7) Tel. Rec. (See Model M31) (Also see Prod. Chge. Bul. 33, Set 159-3) 116

2054A (Ch. 17B1, 17B2) Tel. Rec. (For TV Ch., see Ch. 17B1) 163

2055 (Ch. 17A7) Tel. Rec. (See Model M31) (Also see Prod. Chge. Bul. 33, Set 159-3) 116

2055A (Ch. 17B1, 17B2) Tel. Rec. (See Ch. 17B1) 163

2055B (Ch. 17B2) Tel. Rec. (See Ch. 17B1) 163

2056 (Ch. 17A7) Tel. Rec. (See Model M31) (Also see Prod. Chge. Bul. 33, Set 159-3) 116

MUNTZ-Cont.

2056A (Ch. 17B1, 17B2) Tel. Rec. (See Ch. 17B1) 163

2060 Tel. Rec. 164-6

2158A, 2159A (Ch. 17B5, 17B6) Tel. Rec. (See Ch. 17B1) 163

2162A (Ch. 17B5, 17B6) Tel. Rec. (See Ch. 17B1) 163

2457A (Ch. 17B3, 17B4) Tel. Rec. (See Ch. 17B1) 163

2461A (Ch. 17B3, 17B4) Tel. Rec. (See Ch. 17B1) 163

Ch. 17B1, 17B2, 17B3, 17B4, 17B5, 17B6 Tel. Rec. 163-8

MURPHY

112 2-15

113 2-2

122 (See Model 112) 2

MUSITRON

FX 15-20

PK 16-28

SRC-3 (See Model 101) 13

101 "Piccolo" 13

103 "Piccolo" 15-21

105 21-26

202 21-27

MUTUAL BUYING SYNDICATE (See Drexel or General)

NASH

AC-152 (NH2AC) 184-9

6MN082 9-25

Ch. 6CB2 (See Model 6MN082) 9

NATIONAL CO.

HFS 62-14

HRO-7R, HRO-7T 50-12

HRO-50 112-7

HRO-50R1, HRO-50T1 169-11

NC-TV2, NC-TV7M, NC-TV7W Tel. Rec. (Also See Prod. Chge. Bul. 1 -Set 103-19) 94-5

NC-TV-10C, T, W Tel. Rec. (Also See Prod. Chge. Bul. 1 -Set 103-19) 94

NC-TV-1001 Tel. Rec. (See Model NC-TV-10C) (Also See Prod. Chge. Bul. 1 -Set 103-19) 94

NC-TV-1025 Tel. Rec. (Also See Prod. Chge. Bul. 1 -Set 103-19) 94

NC-TV-1201, NC-TV-1202 Tel. Rec. (See Model NC-TV-10C) (Also See Prod. Chge. Bul. 1 -Set 103-19) 94

NC-TV-1225, NC-TV-1226 Tel. Rec. (See Model NC-TV-10C) (Also See Prod. Chge. Bul. 1 -Set 103-19) 94

NC-2-40DR, NC-2-40DT 41-16

NC-33 47-14

NC-46 9-26

NC-57 48-14

NC-108R, NC-108T 47-15

NC-125 139-10

NC-173R, NC-173T 40-13

NC-183R, NC-183T 49-15

SW-54 141-9

TV-1201 Tel. Rec. (See Model TV-1201) 119-10

TV-1601 Tel. Rec. (See Model TV-1201) 119

TV-1625 Tel. Rec. (See Model TV-1201) 119

TV-1701, TV-1702 Tel. Rec. 145-7

TV-1725, TV-1727 Tel. Rec. (See Model TV-1701) 145

TV-1729, TV-1730, TV-1731, TV-1732 Tel. Rec. (See Model TV-1701) 145

TV-2029, TV-2030 Tel. Rec. (See Model TV-1701) 145

NATIONAL UNION

G-613 "Commuter" 19-23

G-619 11-35

571, 571A, 571B 17-22

NEWCOMB

A-104R 196-8

H-10 14-20

H-14 15-22

KX-30 15-23

NIELSON

1018 Tel. Rec. *

1618 Tel. Rec. (See Ch. 17B1) *

NOBLITT SPARKS (See Arvin)

NORELCO

PT200, PT300 Tel. Rec. 155-13

588A Tel. Rec. 164-7

1200A Tel. Rec. 87-7

(See Model 588A) 164

OAK (See Record Changer Listing)

OLDSMOBILE

982375 20-25

982376 *

982399 59-14

982420 57-12

982421 87-7

982454 60-16

982455 *

982543 157-7

982544, 982573 96-7

982579 (See Model 982543) 157

982697, 982698 (See Model 982544) 96

982699, 982700 150-10

OLYMPIC

DX-214, DX-215, DX-216 Tel. Rec. 106-11

DX-619, DX-620, DX-621, DX-622 Tel. Rec. (See Model DX-214) 106

DX-931, DX-932 Tel. Rec. (See Model DX-214) 106

DX-950 Tel. Rec. (See Model DX-214) 106

HFS 62-15

RTU-3H (Duplicator) 62-15

TV-104, TV-105 Tel. Rec. 67-15

TV-106, TV-107, TV-108 Tel. Rec. (See Model TV-106) 67

TV-922 Tel. Rec. 58-14

TV-922L Tel. Rec. (See Model TV-104) 67

TV928 Tel. Rec. (See Model TV922) 58

TV-944, TV-945, TV-946 Tel. Rec. (See Model TV-104) 67

TV-947 Tel. Rec. (See Model TV-104) 67

TV-948 Tel. Rec. (See Model TV-104) 67

TV-949, TV-950 Tel. Rec. (See Model TV-947) 85

XL-210, XL-211 Tel. Rec. 109-8

XL-612, XL-613 Tel. Rec. (See Model XL-210) 109

6-501, 6-502, 6-502-P, 6-503 4-10

6-501U-U (See Model 6-501U-U) 3

6-501W-U, 6-502-U 3-20

6-504, 6-5041 3-25

6-601W, 6-601V, 6-602, 6-604 Series 22-21

6-604V-110, 6-604V-220, 6-604W-110, 6-604W-150, 6-604W-220 (See Model 6-604 Series) 22

6-606 11-36

6-606-A 11-17

6-606-U 11-18

6-617 4-7

6-617U (See Model 6-617) 4

7-421V, 7-421W, 7-421X, 7-435V, 7-435W 34-13

7-526 30-21

7-532W, 7-532V 32-15

7-537 37-13

7-622, 7-638 34-14

7-724 29-19

7-728 (See Model 7-724) 29

7-925, 7-934, 7-936, 7-939 31-22

8-451 48-15

8-533V, 8-533W 57-14

8-618 35-16

8-925, 8-934, 8-936 45-19

9-435V, 9-435W 152-11

17D, 17D, Tel. Rec. (See Model 752) 126

17C24, Tel. Rec. 182-6

17C44 (Ch. TK17) Tel. Rec. 182

17K31, 17K32, Tel. Rec. (See Model 17C24) 182

17K41, 17K42 (Ch. TK17) Tel. Rec. 196-9

17K50 (Ch. TK17) Tel. Rec. 196-9

17720, Tel. Rec. (See Model 17C24) 182

17733, Tel. Rec. (See Model 17C24) 182

17740 (Ch. TK17) Tel. Rec. 196-9

17748 (Ch. TK17) Tel. Rec. 196-9

20C45 (Ch. TL20) Tel. Rec. 196-9

20C52, 20C53 (Ch. TL20) Tel. Rec. 196-9

20D49 (Ch. TL20) Tel. Rec. 196-9

20K43 (Ch. TL20) Tel. Rec. 196-9

20K51 (Ch. TL20) Tel. Rec. 196-9

20T46, 20T47 (Ch. TL20) Tel. Rec. 196-9

21C28 Tel. Rec. 182-7

21D29 Tel. Rec. (See Model 21C28) 182

21K26 Tel. Rec. (See Model 21C28) 182

21T27 Tel. Rec. (See Model 21C28) 182

51-421W 151-9

489 154-9

51-435-W (See Model 9-435V) 152

752, 752U, 753, 753U, Tel. Rec. 126-8

754 Tel. Rec. (See Model 752) 126

755, 755U Tel. Rec. (See Model 752) 126

757, Tel. Rec. (See Model 752) 126

IMPORTANT

How to obtain Service Data on Pre-War Models

Photo copies of schematics covering pre-war (prior to 1946) receivers can be obtained by regular PHOTOFAC subscribers at 50¢ each (our cost). Additional data can be supplied at a nominal cost per page. When requesting pre-war data, please mention the name of the Parts Distributor who supplies you with your PHOTOFAC Folder Sets.

RCA VICTOR—Cont.

Ch. RC-1092 (See Model 9T57) 122
 Ch. RC1094 51—18
 Ch. RC1096 (See Model A-108) 141
 Ch. RC1096A (See Model 45-W-10) 138
 Ch. RC1099 (See Model B411) 132
 Ch. RC1098A (See Model B-411) 132
 Ch. RC-1102 (See Model 1R81) 156
 Ch. RC-1104, 1, A, A-1, B, B-1, C, D, E (See Model 1X51) 172
 Ch. RC-1110 (See Model PX600) 168
 Ch. RC-1114 (See Model 2B400) 181
 Ch. RC-1115 (See Model 2B863) 193
 Ch. RC-1117A (See Model 2U57) 182
 Ch. RC1118, A, B, C (See Model 2C511) 182
 Ch. RC1119 (See Model 2R51) 194
 Ch. RC-1120, A (See Model 2C52) 194
 Ch. RK-117 (See Model 711V2) 22
 Ch. RK-117A (See Model 8TV41) *
 Ch. RK-121 (See Model 612V1) 17
 Ch. RK-121A (See Model 8PCS41) 90
 Ch. RK-121C (See Model RV151) 61
 Ch. RK-135, RK-135A (See Model 8TK29) 88
 Ch. RK-135A-1 (See Model 8T270) 85
 Ch. RK135C (See Model 9TW309) 95A
 Ch. RK135D (See Model 7A169) 108
 Ch. RS-123 (See Model 612V1) 17
 Ch. RS-123A, B, C (See Model 8PCS41) 90
 Ch. RS-123D (See Model RV151) 61
 Ch. RS-126 (See Model 66E) 17
 Ch. RS-127 (See Model 63E) 28
 Ch. RS-132 (See Model 9EY3) 158
 Ch. RS-132F, H (See Model 45EY1) 135
 Ch. RS-138, A, H (See Model 45EY-2) 165
 Ch. RS-138L, M (See Model 45EY-26) 173
 Ch. RS140 (See Model 45EY-4) 173
 Bently (See Model 4T101)
 Benton (See Model 21175DE)
 Bristol (See Model 17T153)
 Caldwell (See Model 17T162)
 Calhoun (See Model 17T173, 17T173K)
 Clarendon (See Model 21179)
 Covington (See Model 17T172, 17T172K)
 Cumberland (See Model 2160)
 Danley (See Model 21T177)
 Fairfax (See Model 6T84)
 Fairfield (See Model 6T71, 6T72, 7T122, 7T122B)
 Farmington (See Model 21T166DE)
 Hampton (See Model 17T160)
 Harford (See Model 6T87)
 Hayward (See Model 7T111B)
 Highlands (See Model 6T65, 7T112, 7T112B)
 Hillsdale (See Model 9T77, 9T126)
 Kent (See Model 6T54, 7T104, 7T104B)
 Kendall (See Model 17T174, 17T174K)
 Kingsbury (See Model 6T64)
 Modern (See Model 6T75, 7T124)
 Newport (6T53, 7T103, 7T103B)
 Northampton (See Model 9T79)
 Preston (See Model 17T155)
 Provincial (See Model 6T76, 7T125B, 9T128)
 Regency (See Model 6T74, 7T123, 7T123B)
 Rockingham (See Model 21T178)
 Rutland (See Model 6T86, 9T143)
 Sedgwick (See Model 9T89, 9T147)
 Shelby (See Model 2T51)
 Somerville (See Model 2T81, 4T141)
 Suffolk (See Model 21T176)
 Talbot (See Model 16T152)
 Whitfield (See Model 17T154)
 Winston (See Model 7T132)
 York (See Model 9T57, 9T105)

RME

DB-22A 50—14
 HF10-20 49—17
 VHF 2-11 79—14
 VHF-152A 51—18
 45 13—25
 84 14—13

RADIOLA

61-1, 61-2, 61-3 (Ch. RC-1011) 14—25
 61-5 (Ch. RC-1023) 12—25
 61-10 (Ch. RC-1023B) 12—25
 61-8, 61-9 (Ch. RC-1034) 27—21
 62-2 (See RCA Model 6511) 14
 752U (Ch. RC-1063A) 36—19
 762X11, 762X12 (Ch. RC-1058, RC-1058A) 36—20
 Ch. RC-1011 (See Model 61-1) 14
 Ch. RC-1023, RC-1023B (See Model 61-5) 12
 Ch. RC-1034 (See Model 61-8) 27
 Ch. RC-1058, RC-1058A (See Model 762X11) 36
 Ch. RC-1063A (See Model 752U) 36

RADIO CRAFTSMEN

C400 186—11
 RC-1 (Tuner), RC-2 (Audio Amp.) 39—19
 "Kitchenaire" 6—14
 RC-1033 66—13
 RC-10 110—12
 RC100 Tel. Rec. (Also See Prod. Chg. Bul. 39—Set 170-2) 117—11
 RC101 Tel. Rec. (Also See Prod. Chg. Bul. 40—Set 172-1) 140—9
 RC201 Tel. Rec. 151—10
 10 176—9
 202 Tel. Rec. 184—13
 500 164—8

RADIO DEVELOPMENT & RESEARCH CO. (See Magic-Tone)

RADIOETTE

PR-2 50—15

RADIONIC (See Chancellor)

RANGER

118 28—27

RADIO MFG. ENGINEERS (See RME)

RADIO WIRE TELEVISION (See Lafayette)

RAULAND

8A21 87—10
 W-819-A 43—16
 1810 179—10
 1814 99—13
 1820 100—10
 1821, 1822 59—17
 1825 97—14
 1835 60—17
 1841 58—19
 1904 140—10
 1932 148—14
 2100-S (Sub-station) (See Model 2101-A) 39
 2101-A (Master Station) 39—20
 2105 (Master Station) 36—21
 2206, 2206H, 2212, 2212H, 2218, 2218H, 2224, 2224H 80—13
 2306, 2321, 2324 (See Model BA21) 87
 2400 Series 33—22

RAY ENERGY

AD 7—24
 AD4 7—25
 SRB-1X 13—26

RAYTHEON (Also See Belmont)

A-7DX22P Tel. Rec. (See Model 7DX21) 81
 Models A-10DX24, B-10DX22 Tel. Rec. (Also See Prod. Chg. Bul. 1—Set 103-19) 75—14
 C1102 (Ch. 12AX22) Tel. Rec. (Also See Prod. Chg. Bul. 3—Set 105-1) 94—8
 C1104 (Ch. 12AX22) Tel. Rec. (See Model C1102) (Also See Prod. Chg. Bul. 3—Set 105-1) 94
 C-1104B (Ch. 12AX26, 12AX27) Tel. Rec. 141—11
 C-1140 (Ch. 14AX21) Tel. Rec. 123—12
 C-1602, A, B, C (Ch. 16AX23, 25, 26) (C-1602 Series 2 (Ch. 16AX29) Tel. Rec. (Also See Prod. Chg. Bul. 16—Set 126-1) 99—14
 C-1614A (Ch. 16AY211) Tel. Rec. (See Model C-1615A) 124
 C-1614B (Ch. 16AY28) Tel. Rec. (See Model C-1615A) 124
 C-1615A (Ch. 16AY211), C-1615B (Ch. 16AY28) Tel. Rec. (Also See Prod. Chg. Bul. 19—Set 132-1) 124—8
 C-1616A (Ch. 16AY211), C-1616B (Ch. 16AY28) Tel. Rec. (See Model C-1615A) 124
 C-1714A (Ch. 17AY24) Tel. Rec. (See Model C-1615A) 124

RAYTHEON—Cont.

C-1714B (Ch. 17AY21) Tel. Rec. (See Model C-1615A) 124
 C-1715A (Ch. 17AY24), C-1715B (Ch. 17AY21) Tel. Rec. (See Model C-1615A) 124
 C-1716A (Ch. 17AY24), C-1716B (Ch. 17AY21) Tel. Rec. (See Model C-1615A) 124
 C-1724A (Ch. 17AY21) Tel. Rec. (See Model C-1615A) (Also See Prod. Chg. Bul. 19, Set 132-1) 124
 C-1729A, C-1731A (Ch. 17AY21A) Tel. Rec. 176—10
 C-1735A, C-1736A (Ch. 17T1) Tel. Rec. 189—14
 C-2001A, C-2002A (Ch. 20AY21) Tel. Rec. (Also See Prod. Chg. Bul. 43—Set 177-1) 149—9
 C-2006A (Ch. 20AY21) Tel. Rec. (See Model C-2001A) (Also See Prod. Chg. Bul. 43—Set 177-1) 149
 C-2103A, C-2105A (Ch. 21AY21) Tel. Rec. (See Model C-1735A) 189
 C-2108 (Ch. 21T1) Tel. Rec. (See Model C-1735A) 189
 C-2109A (Ch. 21T2) Tel. Rec. *
 C-2110A, C-2111A (Ch. 21T1) Tel. Rec. (See Model C-1735A) 189
 C-2112A, C-2113A, C-2114A, C-2115A, C-2116A (Ch. 21T3) Tel. Rec. (See Model C-2112A) *
 C-2118A (Ch. 21T3) Tel. Rec. (See Model C-2112A) *
 M701 (Ch. 10AX22) Tel. Rec. (See Model C1102) (Also See Prod. Chg. Bul. 3—Set 105-1) 94
 M1101, M1103, M1105 (Ch. 12AX22) Tel. Rec. (See Model C1102) (Also See Prod. Chg. Bul. 3—Set 105-1) 94
 M105B, M-1106, M-1107 (Ch. 12AX26, 12AX27) Tel. Rec. (See Model C-1104B) 141
 M-1402, M-1403, M-1404 (Ch. 14AX21) Tel. Rec. (See Model C-1401) 123
 M-1601 (Ch. 16AX23, 25, 26) Tel. Rec. (See Model C1602) 99
 M-1611A (Ch. 16AY211), M-1611B (Ch. 16AY28) Tel. Rec. (See Model C-1615A) 124
 M-1612A (Ch. 16AY211), M-1612B (Ch. 16AY28) Tel. Rec. (See Model C-1615A) 124
 M-1613A (Ch. 16AY211), M-1613B (Ch. 16AY28) Tel. Rec. (See Model C-1615A) 124
 M-1626 (Ch. 16AY212) Tel. Rec. 165—2A
 M-1711 (Ch. 17AY24), M-1711B (Ch. 17AY21) Tel. Rec. (See Model C-1615A) 124
 M-1712A (Ch. 17AY24), M-1712B (Ch. 17AY21) Tel. Rec. (See Model C-1615A) 124
 M-1713A (Ch. 17AY24), M-1713B (Ch. 17AY21) Tel. Rec. (See Model C-1615A) 124
 M-1722 (Ch. 17AY21) Tel. Rec. (See Model C-1615A) (Also See Prod. Chg. Bul. 19—Set 132-1) 124
 M-1726A, M-1728A (Ch. 17AY21A) Tel. Rec. (See Model C-1735A) 189
 M-1734A (Ch. 17T2) Tel. Rec. (See Model C-2109A) *
 M-2007A, M-2008A (Ch. 20AY21) Tel. Rec. (See Model C-2001A) (Also See Prod. Chg. Bul. 43—Set 177-1) 149
 M-2101A (Ch. 21AY21) Tel. Rec. (See Model C-2103A) 173—1A
 M-2107A (Ch. 21T1) Tel. Rec. (See Model C-1735A) 189
 P-301 (See Model 7DX21) 81
 RC-105 (Ch. 14AX21) Tel. Rec. (For TV Chassis see Model C-1401) 123
 RC-1618A (Ch. 16AY211), RC-1618B (Ch. 16AY28) Tel. Rec. (See Model C-1615A) 124
 RC-1619A (Ch. 16AY211), RC-1619B (Ch. 16AY28) Tel. Rec. (See Model C-1615A) 124
 RC-1718A, RC-1719A (Ch. 17AY24) Tel. Rec. (See Model C-1615A) 124

RAYTHEON—Cont.

RC-1718B, RC-1719B (Ch. 17AY21) Tel. Rec. (See Model C-1615A) 124
 RC-1720A (Ch. 17AY27) Tel. Rec. 147—9
 RC-2005A (Ch. 20AY21) Tel. Rec. (See Model C-2001A) (Also See Prod. Chg. Bul. 43—Set 177-1) 149
 RC-2117A (Ch. 21T3) Tel. Rec. (See Model C-2112A) *
 7DX21, 7DX22P Tel. Rec. 81—13
 10AXF43 Tel. Rec. (See Model A-10DX24) (Also See Prod. Chg. Bul. 3—Set 105-1) 75
 10AXF44 Tel. Rec. (See Model C-1102 (Set 94) and Model A-10DX24 (Set 75)) *
 10DX21, 10DX22 Tel. Rec. (See Model A-10DX24) (Also See Prod. Chg. Bul. 3—Set 105-1) 75
 10DX24 Tel. Rec. (See Model A-10DX24) 75
 18DX21A Tel. Rec. (See 7DX21) 81
 Ch. 10AX22 (See Model C1102) 94
 Ch. 12AX22 (See Model C1102) 94
 Ch. 12AX26, 12AX27 (See Model C-1104B) 141
 Ch. 14AX21 Tel. Rec. (See Model C-1401) 123
 Ch. 16AX23, 25, 26 (See Model C1602) 99
 Ch. 16AY28 (See Model C-1615B) (Also See Prod. Chg. Bul. 19—Set 132-1) 124
 Ch. 16AY212 (Ch. 16AY21) Tel. Rec. *
 Ch. 16AY211 (See Model C-1615A) (Also See Prod. Chg. Bul. 19—Set 132-1) 124
 Ch. 17AY21 (See Model C-1735A) 189
 Ch. 17AY21A (See Model C-1729A) 176
 Ch. 17AY24 (See Model C-1615A) (Also See Prod. Chg. Bul. 19—Set 132-1) 124
 Ch. 17AY27 (See Model RC-1720A) 147
 Ch. 17T1 (See Model C-1735A) 189
 Ch. 17T2 (See Model C-2109A) *
 Ch. 20AY21 (See Model C-2001A) 149
 Ch. 21AY21 (See Model C-2103A) 173—1A
 Ch. 21T1 (See Model C-2108) 189
 Ch. 21T2 (See Model C-2109A) *
 Ch. 21T3 (See Model C-2112A) *
RECORDIO (Wilcox-Gay)
 1810 149—10
 1C-10 146—9
 1J10 (Ch. 1J1) 128—12
 2A10 Recorder 163—10
 6A10, 6A20 (Ch. 6A) 10—27
 6B10, 6B20, 6B30, 6B32 8—27
 7D42, 7D44 (Ch. 7D1) 52—18
 7E40, 7E44 47—20
 8J10, 8J50 62—17
 9G10 91—10
 9G40M, 9G42 86—9
 9H40B (See Model 1J10) 128
 Ch. 111 (See Model 6A10) 10
 Ch. 7D1 (See Model 7D42) 52

REELIST (See Recorder Listing)

REGAL (TOK-FONE)

Tok-Fone (20-watt Amp.) 13—27
 AP40, ARP40, ARF450 15—26
 BP48 49—18
 C-527 182—9
 CD31 Tel. Rec. (See Model 16T31) 80
 CD36 Tel. Rec. *
 CR76 50—16
 CR762 195—11
 FM78 68—14
 L-76 5—18
 P-175 183—12
 W700 (See Model W800) 14
 W800, W801 14—26
 W900, W901 13—28
 16T31 Tel. Rec. 80—14
 16T36 Tel. Rec. *
 17HD31, 17HD36, 17HD37 Tel. Rec. 147—10
 17T22, 17T22DX Tel. Rec. 143—13
 19C31, 19C36 Tel. Rec. (See Model 17HD31) 147
 19D31, 19D36 Tel. Rec. (See Model 17HD31) 147
 20C22, 20C22DX Tel. Rec. (See Model 17T22) 143
 20C31, 20C36 Tel. Rec. (See Model 17HD31) 147
 20D22, 20D22DX Tel. Rec. (See Model 17T22) 143
 20D31, 20D36 Tel. Rec. (See Model 17HD31) 147
 20HD31, 20H36 Tel. Rec. (See Model 17HD31) 147
 20T22, 20T22DX Tel. Rec. (See Model 17T22) 143

REGAL (TOK-FONE)—Cont.

22D17, 22D17DX, 22D19, 22D19DX Tel. Rec. (See Model 17T22) 143
 205 26—23
 208 (See Model W800) 14
 747 27—22
 777 53—21
 1007 Tel. Rec. 83—9
 1030, 1031 Tel. Rec. (See Model 16T31) 80
 1049 17—28
 1107 41—19
 1207, 1208 Tel. Rec. (See Model 1007) 83
 1230 Tel. Rec. (See Model 16T31) 80
 1500 38—19
 1607 Tel. Rec. (See Model 1007) 83
 1708, 1708DX Tel. Rec. (See Model 17T22) 143
 1749 28—29
 1877 182—10
 2217, 2217DX, 2219, 2219DX Tel. Rec. (See Model 17T22) 143
 7152 70—8
 7162 69—12
 7163 66—14
 7251 40—16

REGENCY

RC-600 Tel. UHF Conv. 200—8

REMBRANDT

80 Tel. Rec. *
 130 Tel. Rec. *
 721, 1606, 1606-15, 1950 Tel. Rec. 65—11

REMLER

MP5-5.3 8—28
 5300B, 5300B1, 53001 23—18
 5310 40—17
 5400, 5410 44—19
 5500 "Scottie Pup" 27—23
 5505, 5510, 5515 "Scottie Pup" (See Model 5500) 27
 5520, 5530 "Scottie Junior" (See Model 5500) 27
 6000 77—9

RENRARD

L-1A, PT-1A, 1B5T-1 9—28

REVERE (See Recorder Listing)

ROYAL (Lee)

AN150, AN160 179—11
 20CP, 20TW Tel. Rec. (Similar to Chassis) 149—13

SCOTT (E. H.)

Musical 44—20
 Music Control, Dynamic Noise Suppressor 46—21
 "Ravenswood" Tel. Rec. 150—11
 6T11, 6T11A Tel. Rec. (Also See Prod. Chg. Bul. 4—Set 105-2) 52—19
 13A Tel. Rec. *
 16A 40—18
 300 Tel. Rec. *
 310 154—11
 400 Tel. Rec. (See Model 6T11) (Also See Prod. Chg. Bul. 4—Set 105-2) 52
 515 103—14
 516 165—11
 710, 710A, 710X Tel. Rec. (See Model "Ravenswood") 150
 720 Tel. Rec. *
 800-B 14—27
 800B Tel. Rec. (See Model 6T11 (Set 52) and Model 800B Set 14) (Also See Prod. Chg. Bul. 4—Set 105-2) 145—9
 817C, 817CU Tel. Rec. (See Model 820C—Set 178-9) 178-9
 817T, 817TU (See Model 820C—Set 178-9) 178-9
 820CU (See Model 820C—Set 178-9) 178-9
 820CT (See Model 820C—Set 178-9) 178-9
 820T, 820TU Tel. Rec. (See Model 820C—Set 178-9) 178-9
 910 Tel. Rec. (See Model "Ravenswood") 150
 920 Tel. Rec. (See Model 720) *
 924W Tel. Rec. 176—11
 1000 180—8
 1510 181—11

SCOTT (H. H.)

111-B 143—14
 112-B 144—8
 120-A (See Model 214-A) 183
 210-A 79—15
 210-B 81—14
 211-A (120-A, 220-A) 183—13
 220-A (See Model 214-A) 183

SEARS-ROEBUCK (See Silvertone)

SEEBURG (See Recorder Changer Listing)

SENTINEL

1U-284GA (See Model 284GA) 22
 1U-284 IU-284NA (See Model 284A), 1U-284W (See Model 285P) 6
 1U-285P (See Model 285P) 6
 1U-293CT (See Model 293CT) 29
 1U-2931, 1U-2937, 1U-293W (See Model 294 Series) 1

SENTINEL—Cont.

Table listing various models and their corresponding page numbers under the SENTINEL—Cont. section.

SENTINEL—Cont.

Table listing various models and their corresponding page numbers under the SENTINEL—Cont. section.

SILVERTONE—Cont.

Table listing various models and their corresponding page numbers under the SILVERTONE—Cont. section.

SILVERTONE—Cont.

Table listing various models and their corresponding page numbers under the SILVERTONE—Cont. section.

SILVERTONE—Cont.

Table listing various models and their corresponding page numbers under the SILVERTONE—Cont. section.

SILVERTONE-Cont.

8115 (Ch. 101.825-3D), 101.825-4, B, C (Ch. 101.825-4), 8117 (Ch. 101.825-3E), 8118 (Ch. 101.825-3F), 8118A, B, C (Ch. 101.825-4) (See Model 7119) 62

8124, 8125, 8126 (Ch. 101.831A), 8126 (Ch. 101.831-1) (See Model 8127) 41

8127, A, B, C (Ch. 101.831A), 8128, A, B, C (Ch. 101.831), Wire Recorder Amp. (Ch. 101.773) 41-20

8130 Tel. Rec. 49-21

8132 (Ch. 101.854) Tel. Rec. 66-15

8133 (Ch. 101.829-1, Ch. 101.846) Tel. Rec. (See Model 8132) 66

8144 (Ch. 109.633) 45-23

8145 (Ch. 109.633) 44-23

8146 (Ch. 109.633) 48-23

8147 (Ch. 109.633) 32-22

8150 (Ch. 109.633) 42

8153 (Ch. 109.633) 42

8153A (Ch. 109.635-1) 42-22

8155 (Ch. 463.155) 57-17

8160 (Ch. 109.636), 8160A (Ch. 109.636A), 8168 (Ch. 109.638) 46-23

8169 (Ch. 109.638) (See Model 8168) 46

8200 (Ch. 101.800-2B) (See Model 6200A) (Ch. 101.800-3) 65

8201 (See Model 6200A) 65

8210 (Ch. 101.820-1A), 8220, 8221 (Ch. 101.801-3D), 8222 (See 6220) 9

8230 (Ch. 101.835) 59-18

8231 (See Model 8230) 59

8260 (Ch. 101.823-2B) (See Model 7165, 7166) 10-29

8270 (Ch. 101.822), 8270A (Ch. 101.822A), 9000 (Ch. 132.857), 9005, 9006 (Ch. 132.858), 9022 (Ch. 132.871), 9054 (Ch. 101.849), 9073, 9073A (Ch. 135.244), 9073B (Ch. 135.244-1), 9073C (Ch. 135.243-1) (See Model 9073) 83

9082 (Ch. 135.245) (See Model 41) 101

9101 (Ch. 101.809-3C) (See Model 7080) 58

9102 (See Model 7080) 58

9105 (Ch. 132.875) 89-14

9107A (Ch. 101.851-1) (See Model 8107) 64

9111 (Ch. 110.499) Tel. Rec. (See Model 9123) 79

9112 (Ch. 110.499-1) Tel. Rec. (See Model 9123) 79

9113 (Ch. 110.499) Tel. Rec. (See Model 9123) 79

9114 (Ch. 110.499-1) Tel. Rec. (See Model 9123) 79

9115 (Ch. 478.222), 9116 (Ch. 478.221) Tel. Rec. 97-16

9119, 9120 (Ch. 101.865) Tel. Rec. *

9120A (Ch. 101.865-1) Tel. Rec. (See Model 8127) 66

9121 (Ch. 101.867) Tel. Rec. (See Model 8127) 66

9122 (Ch. 101.864) (See Model 8132) 66

9122A (Ch. 101.868) Tel. Rec. (See Model 9123) 79

9123 (Ch. 110.499), 9124 (Ch. 110.499-1) Tel. Rec. 79-16

9125 (Ch. 478.252) Tel. Rec. *

9125A (Ch. 478.253) Tel. Rec. (See Model 715) 104

9125 B (Ch. 478.253-1) Tel. Rec. *

9126 (Ch. 110.499-2) Tel. Rec. (See Model 9123) 79

9127 (Ch. 110.499-2) Tel. Rec. (See Model 9123) 79

9128A (Ch. 101.868) Tel. Rec. *

9129 (Ch. 110.499) Tel. Rec. (See Model 9123) 79

9130 (Ch. 110.499-1) Tel. Rec. (See Model 9123) 79

9131 (Ch. 478.210) Tel. Rec. 84-10

9132 (Ch. 110.499-1) Tel. Rec. (See Model 9123) 79

9133, 9134 (Ch. 101.866, Radio Ch. 101.859) Tel. Rec. 95-5

9139, 9140 (Ch. 110.499-1) Tel. Rec. (See Model 9123) 79

9153 (Ch. 435.417) 67-16

9161 (Ch. 548.358) 88-10

9260 (Ch. 101.850) 51-20

9270 (Ch. 547.245) 82-11

9280 (Ch. 528.168) 94-9

Ch. 100.043 (See Model 133) 156

Ch. 100.107 (See Model 133) 156

Ch. 100.107-1 (See Model 149) 156

SILVERTONE-Cont.

Ch. 100.111 (See Model 143A) 121

Ch. 100.112 (See Model 161) 99A-10

Ch. 100.115 (Radio Ch. 100.959) (See Model 142) *

Ch. 100.120 (See Model 165-16) 144

Ch. 100.201 (See Model 69) 162

Ch. 100.202 (See Model 1066) 162

Ch. 100.202-1 (See Model 2195-21) 162

Ch. 100.208 (See Model 1176-21) 165

Ch. 100.208-1 (See Model 2195-21) 165

Ch. 100.209 (See Model 2170-C) 193

Ch. 101.660-1A (See Model 6100) 6

Ch. 101.662-2B, 101.662-2D, 101.662-3C (See Model 6105) 7

Ch. 101.662-4E, 101.662-5F (See Model 6106A) 29

Ch. 101.666-1B (See Model 6285A) 20

Ch. 101.672-1A, 101.672-1B (See Model 6092) 10

Ch. 101.677B (See Model 6290) 20

Ch. 101.773 (See Model 8127) 41

Ch. 101.800-1, 101.800-1A (See Model 6200A) 9

Ch. 101.800-3 (See Model 6200A) 65

Ch. 101.801, 101.801-1A (See Model 6220) 9

Ch. 101.802, 101.802-1 (See Model 6230) 11

Ch. 101.807, 101.807A (See Model 7021) 16

Ch. 101.808 (See Model 7054) 15

Ch. 101.808-1C, 101.808-1D (See Model 8052) 68

Ch. 101.809 (See Model 7080) 16

Ch. 101.809-1A, B, 101.809-2, 101.809-3C (See Model 7080) 58

Ch. 101.810 (See Model 7090) 17

Ch. 101.811 (See Model 7100) 17

Ch. 101.813 (See Model 8050) 30

Ch. 101.814, 101.814-1A (See Model 7085) 30

Ch. 101.814-2B, 101.814-3B, 101.814-3C, 101.814-6C (See Model 8086) 61

Ch. 101.817 (See Model 7070) 30

Ch. 101.819A (See Model 7226) 31

Ch. 101.820 (See Model 7210) 32

Ch. 101.821 (See Model 8090) 49

Ch. 101.822, 101.822A (See Model 8270) 57

Ch. 101.823, 101.823A, 101.823-1, 101.823-1A (See Model 7160) 10

Ch. 101.825, 101.825-1A, 101.825-1B (See Model 7115) 16

Ch. 101.825-2C, 101.825-3D, 101.825-3E, 101.825-3F, 101.825-4 (See Model 7119) 62

Ch. 101.829 (See Model 8100) 51

Ch. 101.829-1 (See Model 8132) 66

Ch. 101.831, 101.831A, 101.831-1 (See Model 8127) 41

Ch. 101.833 (See Model 8105) 35

Ch. 101.834 (See Model 8072) 34

Ch. 101.835 (See Model 8230) 59

Ch. 101.839 (See Model 8051) 49

Ch. 101.846 (See Model 8132) 66

Ch. 101.849 (See Model 9054) 63

Ch. 101.850 (See Model 9260) 51

Ch. 101.851, 101.851-1 (See Model 8107A) 64

Ch. 101.852 (See Model 8080) 52

Ch. 101.854 (See Model 8132) 66

Ch. 101.859 (See Model 9133) 95

Ch. 101.859-1, 2 (See Model 64) 113

Ch. 101.860 (See Model 1058) 162

Ch. 101.864 (See Model 9122) 66

Ch. 101.865 (See Model 9119) *

Ch. 101.865-1 (See Model 9120A) *

Ch. 101.866 (See Model 9133) 95

Ch. 101.867 (See Model 9121) *

Ch. 101.868 (See Model 9122A) *

Ch. 109.626 (See Model 7152) 25

Ch. 109.627 (See Model 7153) 26

SILVERTONE-Cont.

Ch. 109.631 (See Model 8145) 45

Ch. 109.632 (See Model 8148) 44

Ch. 109.633 (See Model 8149) 48

Ch. 109.634 (See Model 8150) 32

Ch. 109.635, 109.635-1 (See Model 8153) 42

Ch. 109.636, 109.636A (See Model 8160) 50

Ch. 109.638 (See Model 8168) 46

Ch. 110.451, 110.452 (See Model 6051) 13

Ch. 110.454 (See Model 6072) 13

Ch. 110.466, 110.466-1 (See Model 7086) 27

Ch. 110.473 (See Model 8103) 56

Ch. 110.499 (See Model 9123) 79

Ch. 110.499-1 (See Model 9124) 79

Ch. 110.499-2 (See Model 9126) 79

Ch. 110.700, -1, -10, -40 (See Model 116) 139

Ch. 110.700-2, -20 (See Model 134) *

Ch. 110.700-90, 110.700-96 (See Model 1116-16) *

Ch. 132.011 (See Model 1052) 174

Ch. 132.012 (See Model 1054) 174

Ch. 132.012-1 (See Model 1054A) 174

Ch. 132.021 (See Model 2014) 174

Ch. 132.022 (See Model 2009) 174

Ch. 132.024, -1, -2 (See Model 2015) 174

Ch. 132.024-3 (See Model 2105A) 174

Ch. 132.024-4 (See Model 2145B) 174

Ch. 132.024-5, -6 (See Model 3105) 174

Ch. 132.024-31 (See Model 2105A) 174

Ch. 132.027 (See Model 2022) 174

Ch. 132.035 (See Model 2174) 174

Ch. 132.044 (See Model 3175) 174

Ch. 132.045, -1 (See Model 3106A) 174

Ch. 132.807-2 (See Model 7025) 29

Ch. 132.816, 132.816A (See Model 6011) 15

Ch. 132.818 (See Model 6002) 5

Ch. 132.818-1 (See Model 8003) 53

Ch. 132.820 (See Model 6016) 27

Ch. 132.825-4 (See Model 6050) 15

Ch. 132.826-1 (See Model 6071) 15

Ch. 132.838 (See Model 8000) 31

Ch. 132.839 (See Model 8005) 33

Ch. 132.840 (See Model 8010) 40

Ch. 132.841 (See Model 8020) 43

Ch. 132.858 (See Model 9005) 72

Ch. 132.868 (See Model 8021) 70

Ch. 132.871 (See Model 9102) 76

Ch. 132.875 (See Model 9105) 89

Ch. 132.877 (See Model 18) 140

Ch. 132.878 (See Model 1) 101

Ch. 132.880 (See Model 210) 109

Ch. 132.881 (See Model 5) 144

Ch. 132.887 (See Model 105) 57

Ch. 132.884, -1, -2 (See Model 15) 141

Ch. 132.887 (See Model 51) 112

Ch. 132.888 (See Model 54) 115

Ch. 132.889, -1 (See Model 106, 107) *

Ch. 132.889-2 (See Model 106) 149

Ch. 132.890 (See Model 179-16) 130

Ch. 132.896 (See Model 10) 144

Ch. 132.896-1 (See Model 2023) 144

Ch. 134.111 (See Model 72) 142

Ch. 135.243 (See Model 8073) 84

Ch. 135.243-1 (See Model 9073) 83

Ch. 135.244, 135.244-1 (See Model 9073) 83

Ch. 135.245 (See Model 41) 101

Ch. 137.906 (See Model 246) 111

Ch. 139.150, 139.150-1 (See Model 6685) 15

Ch. 185.706 (See Model 1304) *

Ch. 319.190 (See Model 1301) 91

SILVERTONE-Cont.

Ch. 319.200, 319.200-1 (See Model 1300) 90

Ch. 431.188, 431.188-1 (See Model 7148) 23

Ch. 431.199 (See Model 8144) 32

Ch. 431.202 (See Model 8130) 49

Ch. 434.140 (See Model 7111) 30

Ch. 435.240 (See Model 7300) 45

Ch. 435.410 (See Model 7350) 38

Ch. 435.417 (See Model 9153) 67

Ch. 436.200 (See Model 7145) 23

Ch. 456.150 (See Model 1260) (See Model 1261) 37

Ch. 456.150-1 (See Model 1260) 37

Ch. 463.155 (See Model 8155) 57

Ch. 478.206-1 (See Model 8024) 80

Ch. 478.210 (See Model 9131) 84

Ch. 478.221 (See Model 9115) 97

Ch. 478.224 (See Model 9115) 97

Ch. 478.238 (See Model 25) 161

Ch. 478.240 (See Model 144) 160

Ch. 478.252 (See Model 9125) *

Ch. 478.253 (See Model 125) 104

Ch. 478.253-1 (See Model 9125B) *

Ch. 478.257 (See Model 125) 104

Ch. 478.257-1 (See Model 125B) 104

Ch. 478.289 (See Model 112) 118

Ch. 478.302 (See Model 114) 104

Ch. 478.303, A (See Model 110) 104

Ch. 478.309 (See Model 120) 115

Ch. 478.311 (See Model 120) 115

Ch. 478.312 (See Model 144) 160

Ch. 478.313 (See Model 164-14) *

Ch. 478.319 (See Model 163-16) 157

Ch. 478.338 (See Model 150-14) 142

Ch. 478.339 (See Model 166-16) *

Ch. 478.339-A (See Model 166-17) *

Ch. 478.339-B (See Model 1166-17) *

Ch. 478.361 (See Model 1150-14) *

Ch. 488.237 (See Model 237) 145

Ch. 528.168 (See Model 9280) 94

Ch. 528.171-1 (See Model 1275) 107

Ch. 528.223 (See Model 220) 110

Ch. 528.174 (See Model 215) 117

Ch. 528.194 (See Model 1040) 181

Ch. 528.196 (See Model 1032) 183

Ch. 528.210, -1 (See Model 1017) 182

Ch. 528.239 (See Model 3170) 70

Ch. 528.630, -1 (See Model 151-16) *

Ch. 528.631 (See Model 1184-20) 181

Ch. 528.6286, -1, -3 (See Model 6286) 185

Ch. 528.6287, -1, -3 (See Model 6286) 185

Ch. 528.6293-2 (See Model 6293) 99

Ch. 528.6295 (See Model 6295) 98

Ch. 547.245 (See Model 9270) 82

Ch. 548.358 (See Model 9161) 88

Ch. 548.358-1 (See Model 245) 107

Ch. 548.360-1 (See Model 239) 115

Ch. 548.361 (See Model 239) 115

Ch. 548.363 (See Model 33) 111

Ch. 549.100, 549.100-1 (See Model 101) 102

Ch. 549.100-3 (See Model 102A) 161

Ch. 549.100-4 (See Model 160-12) 97A

Ch. 549.100-5, 6, 7, 8, 9 (See Model 102A) 161

Ch. 757.100 (See Model 2007) *

SIMPLON

CA-5 22-27

VV2 17-30

Ch. 185.706 (See Model 1304) *

SKY KNIGHT (See Air Knight) *

SKYRIDER (See Hallicrafters) *

SKYROVER

N5-RD-250 (9022-N), N5-RD-251 (9022-H) 6-31

N5-RD295 (Ch. 5A7) 21-30

SKY WEIGHT

81B 20-30

82 13-13

SONOGRAPH

BL100 122-10

BW100 (See Model BL100) 122

SONORA

RB-176 (See Model RB-176) 5-31

RB-207 (See Model RB-176) 5

RCU-208 5-30

RDU-209 3-29

RET-210 24-24

RGAF-212, RGMF-230 33-28

RKR-21 (Ch. RKR) 9-31

RMR-219 9-28

RMR-220, RMR-245 (See Model RMR-219) 19

RQU-222 (See Model RMR-222) 8-23

RX-238 23-24

WAU-243 27-27

WBRU-239 32-23

WCU-246 36-22

WDU-233 25-27

WDU-249 37-20

WGU-265 33-28

WGFU-241, WGFU-242 24-25

WJU-252 36-23

WKRU-254A 34-20

WLRU-219A 37-21

WLRU-220A (See Model WLRU-219A) 37

WLRU-245A (See Model WLRU-219A) 37

WXTU-700, WXTUA-700A Tel. Rec. *

YB-299 112-9

100 41-21

101 48-24

102 53-23

171 109-13

172 (See Model 171) 109

302, 303 Tel. Rec. 97A-13

305, Tel. Rec. 174-11

306 108-11

323, 324, 325 Tel. Rec. (See Model 305) 174

332 Tel. Rec. (See Model 305) 174

350, 351 Tel. Rec. 173-13

352 Tel. Rec. 182-12

401 47-21

402A (See Model RMR-219) 19

402F (See Model WLRU-219A) 37

SOUND, INC.

"InterSound" 7-27

MB6P3, MB6P6, MB6P30, MB6R4 35-21

MB7E3 28-31

MB7E8 26-24

5B2 28-32

SPARKS-WITHINGTON (See Sparton)

SPARTON (Also see Record Changer Listing)

4AW17 (Ch. 417) 50-18

4AW17-A (Ch. 417A) 49-22

5AH06, 5AI06 (See Model 5AW06) 4

5A116 (Ch. 5-16) 3-29

5AM26-PS (Ch. 5-26-PS) 5-17

5AW06 (Ch. 5-06) 4-17

5AW16 (Ch. 5-16) See Model 5A116 (Ch. 5-16) 30

6AM06 (Ch. 6-06) 34-21

6AM26 (See Model 6AW26PA) 15

6AW26PA (Ch. PC5-6-26) 15-33

6-66A (Ch. 666A) 51-21

7AM46 (Ch. 7-46) 1-31

7AM46PA, 7BM46PA, 7BW46PA, 8AM46 (See Model 7AM46) 1

10A876-PA, 10AM76-PA, 10BM76-PA (See Model 10BW76-PA) 15

10BW76-PA (Ch. 10-76PA) 15-34

100, 101 (Ch. 5A7) 38-23

102, 103, 104 (See Model 100) 38

121 (Ch. 819) 57-19

122 (See Model 121) 57

130, 132, 135, 139 (Ch. 5A10) 94-10

14 (See Model 121) 57

141A (Ch. 8110) 92-6

141XX, 142XX (Ch. 8W10) 126-12

142 (See Model 121) 57

150, 151, 152, 155 (Ch. 4E10) 91-12

201 350, 351 (Ch. 613) 197-12

1000, 1001, 1003 (Ch. 1217) 60-18

1005, 1006, 1007, 1008 (Ch. 8-57) 29-25

1010 (Ch. 717) 35-22

1015 (See Model 10BW76PA) 15

1020, 1021, 1023 (See Model 1000) 60

1030, 1030A (Ch. 618) 37-22

1031, 1031A (See Model 1030) 37

1035, 1035A, 1036, 1036A, 1037, 1037A, 1039, 1040, 1041 (Ch. 918) 62-19

1040XX, 1041XX (Ch. 8W10) (See Model 141XX) 126

1051, 1052 (Ch. 689) 58-21

1058, 1059, 1060, 1061, 1064, 1071, 1072 (See Model 121) 57

SPARTON—SWANK

SPARTON—Cont.

1080 (Ch. 918A) (See Model 4900TV) ... 64
 1080A (Ch. 8110) (See Model 141A) ... 92
 1081 (Ch. 918A) (See Model 4900TV) ... 64
 1081A (Ch. 8110) (See Model 141XX) ... 92
 1081B (Ch. 8110) (See Model 141XX) ... 126
 1090, 1091 (Ch. 8110) (See Model 141XX) ... 126
 1210, 1211 (Ch. 8110) (See Model 141XX) ... 126
 1300, 1301 (Ch. 613) 197-12
 4900TV (Ch. 24TV9C, 918A) Tel. Rec. 64-11
 4916, 4917, 4918 (Ch. 24T10, 3T10, 6S10) Tel. Rec. ... 164-9
 4920, 4921, 4922 (Ch. 24T10) Tel. Rec. (See Model 4916) ... 164
 4935 (Ch. 23T10) ... 133-1A
 4939TV, 4940TV, 4941TV (Ch. 24TV9, 3TV9) Tel. Rec. (See Model 4900TV) ... 64
 4942 (Ch. 23T10) Tel. Rec. (See Model 4935) ... 133-1A
 4944, 4945 (Ch. 3T10, 24T10) Tel. Rec. ... 86-10
 4951, 4952 (See Model 4900TV) ... 64
 4954 (Ch. 23T10) Tel. Rec. (See Model 4935) ... 133-1A
 4964, 4965 (Ch. 23T10) Tel. Rec. ... 157-11
 4970, 4971 (Ch. 8510) (See Model 141A) ... 92
 5002, 5003 (Ch. 23T10) Tel. Rec. ... 102-13
 5006, 5007 (Ch. 23T10) Tel. Rec. (See Model 5002) ... 102
 5006X (Ch. 25TK10A) Tel. Rec. ... 121-13
 5007X (Ch. 25TK10A) Tel. Rec. (See Model 5006X) ... 121
 5010, 5011 (Ch. 19T510, A) Tel. Rec. ... 104-11
 5014, 5015 (Ch. 19T510, A) Tel. Rec. (See Model 5010) ... 104
 5025 (Ch. 26S5160) Tel. Rec. ... 128-13
 5025BA Tel. Rec. (See Model 5025) (Also See Prod. Chge. Bul. 22 -Set 138-1) ... 128
 5026 Tel. Rec. (See Model 5025) ... 128
 5029, 5030 (Ch. 26S160) Tel. Rec. (See Model 5025) ... 128
 5035, 5036, 5037 (Ch. 26S5160) Tel. Rec. (See Model 5025) ... 128
 5052 (Ch. 24T10, 3T10) Tel. Rec. ... 97A-13
 5056, 5057 (Ch. 19T510, A) Tel. Rec. (See Model 5010) ... 104
 5064, 5065 (Ch. 23T10) Tel. Rec. (See Model 4964) ... 157
 5068, 5069 (Ch. 24TV9C) Tel. Rec. (See Model 4900TV) ... 64
 5071, 5072 (Ch. 19T510, A) Tel. Rec. (See Model 5010) ... 104
 5075BA Tel. Rec. (See Model 5025) (Also See Prod. Chge. Bul. 22 -Set 138-1) ... 128
 5076 (Ch. 26S5160, B) Tel. Rec. (See Model 5025) ... 128
 5076BA Tel. Rec. (See Model 5025) (Also See Prod. Chge. Bul. 22 -Set 138-1) ... 128
 5076B Tel. Rec. (See Model 5025) ... 128
 5077, 5077BA Tel. Rec. (See Model 5025) (Also See Prod. Chge. Bul. 22 -Set 138-1) ... 128
 5079, 5079B Tel. Rec. (See Model 5025) (Also See Prod. Chge. Bul. 22 -Set 138-1) ... 128
 5080, 5080C Tel. Rec. (See Model 5025) (Also See Prod. Chge. Bul. 22 -Set 138-1) ... 128
 5082, 5083 (Ch. 26S160, 26S170) Tel. Rec. (See Model 5025 Set 128 and Model 141XX Set 126) (Also See Prod. Chge. Bul. 22 -Set 138-1) ... 128
 5085, 5086 (Ch. 2RD190, 25R190) Tel. Rec. ... 139-14
 5089, 5090 (26S160, 26S170) Tel. Rec. (See Model 5025 Set 128 and Model 141XX Set 126) (Also See Prod. Chge. Bul. 22 -Set 138-1) ... 128
 5101, 5102, 5103, 5104, 5105 Tel. Rec. (See Model 5025) (Also See Prod. Chge. Bul. 22 -Set 138-1) ... 128

SPARTON—Cont.

5107, 5108 (Ch. 26S5170D, 26S5170DD) Tel. Rec. ... *
 5107X (Ch. 26S5171) Tel. Rec. ... *
 5110 (Ch. 26S5170D, 26S5170DD) Tel. Rec. (See Model 5107) ... *
 5125 (Ch. 26S5170D, 26S5170DD) Tel. Rec. (See Model 5107) ... *
 5132, 5133, 5134 Tel. Rec. (See Model 5025) (Also See Prod. Chge. Bul. 22 -Set 138-1) ... 128
 5155, 5156, 5157 (Ch. 26S170X, 26S170XP) (See Model 5025) (Also See Prod. Chge. Bul. 22 -Set 138-1) ... 128
 5158 Tel. Rec. (See Model 5025) (Also See Prod. Chge. Bul. 22 -Set 138-1) ... 128
 5162X, 5163X (Ch. 26S171A) Tel. Rec. (See Model 5107X) ... *
 5165X, 5166X (Ch. 26S171) Tel. Rec. ... 166-13
 5170, 5171 (Ch. 25D201, 25D201) Tel. Rec. ... 147-11
 5175X (Ch. 26S171) Tel. Rec. (See Model 5165X) ... 166
 5178X (Ch. 26S171) Tel. Rec. (See Model 5165X) ... 166
 5182, 5183 Tel. Rec. (See Model 5025) (Also See Prod. Chge. Bul. 22 -Set 138-1) ... 128
 5188, 5189 Tel. Rec. (See Model 5025) (Also See Prod. Chge. Bul. 22 -Set 138-1) ... 128
 5191, 5192 (Ch. 25D201, 25D201) Tel. Rec. (See Model 5170) ... 147
 5207, 5208 (Ch. 26S5172, A) Tel. Rec. ... 167-14
 5207A (Ch. 25S172) ... *
 5210 (Ch. 26S5172B) Tel. Rec. (See Model 5207) ... 167
 5212 (Ch. 21S172) Tel. Rec. ... 174-12
 5220 (Ch. 26S172C) Tel. Rec. (See Model 5207) ... 167
 5225, 5226 (Ch. 26S172C) Tel. Rec. (See Model 5207) ... 167
 5250, 5252, 5253 (Ch. 51S171) Tel. Rec. (See Model 5212) ... 174
 5262, 5263 (Ch. 26S5172, A) Tel. Rec. (See Model 5207) ... 167
 5265 (Ch. 26S172, A) Tel. Rec. (See Model 5207) ... 167
 5267, 5268 (Ch. 26S172, A) Tel. Rec. (See Model 5207) ... 167
 5270 (Ch. 26S172C) Tel. Rec. (See Model 5207) ... 167
 5271 (Ch. 26S172C) Tel. Rec. (See Model 5207) ... 167
 5272, 5273 (Ch. 26S172C) Tel. Rec. (See Model 5207) ... 167
 5288, 5289 (Ch. 25CD202) Tel. Rec. ... 178-11
 5290 (Ch. 25S202) Tel. Rec. ... *
 5291, 5292, 5293, 5294, 5295 (Ch. 25CD202) Tel. Rec. (See Model 5288) ... 178
 5296A, 5297A (Ch. 25CD202) Tel. Rec. (See Model 5288) ... 178
 5296, 5297 (Ch. 25CD202) Tel. Rec. (See Model 5290) ... *
 5298, 5299 (Ch. 25CD202) Tel. Rec. (See Model 5288) ... 178
 5342, 5343 (Ch. 25D213) Tel. Rec. ... *
 5382, 5383 (Ch. 25D213) Tel. Rec. (See Model 5342) ... *
 Ch. PC-5-6-26 (See Model 6AW26PA) ... 37
 Ch. 2R190 (See Model 5085) ... 139
 Ch. 25D201 (See Model 5170) ... 147
 Ch. 3T10 (See Model 4944) ... 86
 Ch. 3T10 (See Model 5025) ... 97A
 Ch. 3TV9, 3TV9C (See Model 4900TV) ... 64
 Ch. 4E10 (See Model 150) 91
 Ch. 5A7 (See Model 100) ... 38
 Ch. 5-06 (See Model 5AW06) ... 4
 Ch. 5A10 (See Model 130) 94
 Ch. 5-16 (See Model 5A116) ... 30
 Ch. 5-26PS (See Model 5AM26PS) ... 5
 Ch. 613 (See Model 350) ... 58
 Ch. 618 (See Model 1030) 37
 Ch. 6-06 (See Model 6AM06) ... 35
 Ch. 7-47 (See Model 1010) 30
 Ch. 7-47 (See Model 7AM46) ... 1
 Ch. 819 (See Model 121) ... 57
 Ch. 8L10 (See Model 141A) 92
 Ch. 8S10 (See Model 141A) 92
 Ch. 8W10 (See Model 141XX) ... 126
 Ch. 8-46 (See Model 8AM46) ... 1

SPARTON—Cont.

Ch. 8-57 (See Model 1005) 29
 Ch. 918 (See Model 1035) 62
 Ch. 918A (See Model 4900TV) ... 64
 Ch. 10-76PA (See Model 10B76PA) 15
 Ch. 1217 (See Model 1000) 60
 Ch. 19T510, 19T510A (See Model 5010) ... 104
 Ch. 21S172 (See Model 5212) ... 174
 Ch. 23T10 (See Model 4964) ... 157
 Ch. 23T10 (See Models 4935, 4942, 4954, 4960) ... 133-1A
 Ch. 23D10 (See Model 5002) ... 102
 Ch. 24T10 (See Model 4944) ... 86
 Ch. 24T10 (See Model 4916) ... 164
 Ch. 24T10 (See Model 4916) ... 164
 Ch. 24T10 (See Model 5025) ... 97A
 Ch. 24TV9, 24TV9C (See Model 4900TV) ... 64
 Ch. 25CD202 (See Model 5288) ... *
 Ch. 25D213 (See Model 5342) ... *
 Ch. 25R190 (See Model 5085) ... 139
 Ch. 25S172 (See Model 5207 A) ... *
 Ch. 25S202 (See Model 5290) ... *
 Ch. 25TK10A (See Model 5006X) ... 121
 Ch. 26S160, 26S170, 26S171 (See Model 5025) ... 128
 Ch. 26S170X, 26S170XP (See Model 5155) ... 166
 Ch. 26S171 (See Model 5165X) ... 166
 Ch. 26S172, A (See Model 5207) ... *
 Ch. 26S172C (See Model 5207) ... 167
 Ch. 26S5170D, 26S5170DD, 26S5170E (See Model 5107) ... *
 Ch. 26S5172, A, B (See Model 5207) ... *
 Ch. 417 (See Model 48W17) ... 50
 Ch. 466A (See Model 48W17A) ... 49
 Ch. 666A (See Model 6-66A) ... 51

SPIEGEL (See Aircastle)

STARK
 410 ... 40-22
 1010 ... 88-2
 1020 ... 89-5

STARRETT
 Gotham Tel. Rec. ... 101-12
 Henry Hudson, Henry Parks Tel. Rec. ... 92-7
 John Hancock Tel. Rec. ... 96-10
 Nathan Hale Tel. Rec. ... 87-12
 Robert E. Lee Tel. Rec. (See Model Henry Hudson) ... 92
 A17CG-1 (Ch. 1751) Tel. Rec. ... 165-2A
 A17G-1 (Ch. 1751) Tel. Rec. (See Model A17CG-1) ... 165-2A
 A20C-2 (Ch. 1851) Tel. Rec. (See Model A17CG-1) ... 165-2A
 A20TG (Ch. 1851) Tel. Rec. (See Model A17CG-1) ... 165-2A
 178M1 (Ch. 1251) Tel. Rec. ... 149-13
 208M1 (Ch. 1551) Tel. Rec. (See Model 178M1) ... 149
 278M1 (Ch. 1251) Tel. Rec. (See Model 178M1) ... 149
 29AM1 (Ch. 1451) Tel. Rec. (See Model 178M1) ... 149
 308M1 (Ch. 1551) Tel. Rec. (See Model 178M1) ... 149
 378M1 (Ch. 1251) Tel. Rec. (See Model 178M1) ... 149
 39AM1 (Ch. 1451) Tel. Rec. (See Model 178M1) ... 149
 Chastis 1751, 1851 (See Model A17CG-1) ... 165-2A

STEELMAN
 AF1100 ... 180-9
 102 ... 184-14
 107 ... 178-12
 200 ... 23-25
 215 ... 165-13
 303 ... 19-31
 327 ... 182-13
 331 ... 186-12
 350, 351 ... 21-31
 357 ... 178-13
 450, 451 ... 178-14
 487 ... 182-14
 517 ... 179-12
 591 ... 164-10
 597 ... 183-16
 601 ... 177-12
 602 ... 185-13

STEELMAN—Cont.

4000 ... 176-12
 5000 ... 186-13
 5101 ... 162-12
 6000 ... 163-11

STEWART-WARNER
 AVC1 (Code 9054B), AVC2 (Code 9054C) AVTI (Code 9054-A) Tel. Rec. 64-12
 A51T1 (Code 9020-A), A51T2 (Code 9020-B), A51T3 (Code 9020-C), A51T4 (Code 9020-D) ... 17-32
 A61CR1 (Code 9034-C), A61CR2 (Code 9034-D), A61CR3 (Code 9034-E), A61CR4 (Code 9034-F) ... 39-25
 A61P1 (Code 9036-A), A61P2 (Code 9036-B), A61P3 (Code 9036-C) ... 42-23
 A72T1 (Code 9026-A), A72T2 (Code 9026-B), A72T3 (Code 9026-C), A72T4 (Code 9026-D) ... 32-24
 A92CR3, A92CR3S, A92CR6, A92CR6S (Code 9028-F) ... 29-26
 B51T1, B51T2, B51T3 (Code 9044A, B, C) ... 58-22
 B61T1, B61T2 (Code 9044A, B) ... 59-19
 B72CR1 (Code 9038A), B72CR2, B72CR3, B72CR4, B72CR5, B72CR6, B72CR7, B72CR8, B72CR9, B72CR10 (Codes 9043A, B, C, D, K, L, M) ... 65-14
 CS1T1 (Code 9054-A), CS1T2 (Code 9054-B) ... 41-22
 T-711 (Code 9031-A) Tel. Rec. ... 95A-12
 T-711M (Code 9031-AM) Tel. Rec. (See Model T-711) ... 95A
 T-712 (Code 9031-B) Tel. Rec. (See Model T-711) ... 95A
 TRC-721 (Code 9037-A) Tel. Rec. (See Model T-711) ... 95A
 21C-9210C (Series "A, B, C, D, E") Tel. Rec. ... 192-8
 21C-9211D, E, F, G (Series "A, B, C") Tel. Rec. ... 200-9
 21T-9210A (Series "A, B, C, D, E") Tel. Rec. (See Model 21C-9210C) ... 192
 21T-9211B (Series A, B) Tel. Rec. ... 200-9
 21T-9211C (Series A, B, C) Tel. Rec. ... 200-9
 51746 (Code 9024-B), 51756 (Code 9024-C) ... 39-24
 511T26 (Code 9018-C), 511T36 (Code 9018-F), 511T46 (Code 9018-H), 511T76 (Code 9018-B) ... 15-35
 61T16 (Code 9022-A), 61T26 (Code 9022-B) ... 1-6
 62T16 (Code 9023-C), 62T26 (Code 9023-D), 62T36 (Code 9023-E), 62T46 (Code 9023-F) ... 2-21
 72CR16, 72CR26 ... 18-28
 9000-B, D, E, F, G ... 11-22
 9002-A, 9002-B, 9002-P, 9002-R ... 38-24
 9005-A, B ... 13-31
 9007-A, F, G ... 10-30
 Models 9100A, 9100B, 9100C, 9100D, 9100E, 9100F, 9100G, 9100H Tel. Rec. ... 75-15
 9103-B, C, 9104-A, B, C Tel. Rec. ... 105-10
 9105-A, B Tel. Rec. ... 118-10
 9106A, B Tel. Rec. ... 118-10
 9108A, 9109A, B Tel. Rec. (See Model 9106A) ... 118
 9113A Tel. Rec. (See Model 9106A) ... 118
 9120-A, B, C, D, E, F Tel. Rec. ... 137-11
 9121-A, 9121-B, 9122-A Tel. Rec. ... 138-9
 9124-A Tel. Rec. ... *
 9125-A Tel. Rec. ... *
 9126-A, B Tel. Rec. (See Model 9120) (Also See Prod. Chge. Bul. 51-Set 185-1) ... 137
 9127-A Tel. Rec. ... 162-13
 9132A Tel. Rec. ... 190-13
 9150-B, 9150-D, 9150-D2 ... 140-12
 9151-A ... 106-14
 9152-A, B, C ... 102-14
 9153-A ... 108-12
 9154-C, 9154-CZ ... 142-13
 9160 AU, BU, CU, DU, EU ... 171-10
 9161-A, B, C ... 170-12
 9162-A, B ... 168-13
 9164-A, B (See Model 9162A) ... 168
 9165-A, B ... 193-11
 9200-A, C, D, FA, G Tel. Rec. ... 132-13
 9202-A, B, C, DA, DB, DD, DDA, E, F, FA Tel. Rec. (Thru Series "B") ... 158-12
 9202-A, B, C, DA, DB, DD, DDA, E, F, FA Tel. Rec. (Thru Series "H") ... 172-9
 9202-A, B, C, DA, DB, DD, DDA, E, F, FA (Series "H") (See Model 9202, Series H) (Also See Prod. Chge. Bul. 60-Set 194-1) ... 172
 9203A Tel. Rec. ... 166-14
 9204-A Tel. Rec. ... 164-11

STEWART-WARNER—Cont.

9209-A, AW, B, C, D (Series A, B, C, D, E) Tel. Rec. ... 181-14
 9120-C (Series "A, B, C, D, E") Tel. Rec. (See Model 21C-9210C) ... 192

ST. GEORGE (See Recorder Listing)

STRATOVOX
 579-1-58A ... 6-32

STROMBERG-CARLSON
 AM-43 ... 129-11
 AM-48, AM-49 ... 131-14
 AP-50 ... 130-13
 AR-37 ... 128-14
 AR-37A ... 173-15
 AR-40 ... 194-12
 AR-425 ... 199-12
 AU-29 ... 125-11
 AU-32 ... 133-12
 AU-33 ... 134-10
 AU-34 ... 128-15
 AU-35 ... 138-10
 AU-42 ... 137-12
 AV-38, AV-39 ... 126-13
 C-1 ... 153-14
 SR-40 ... 191-18
 TC-10 Tel. Rec. (Also See Prod. Chge. Bul. 1-Set 103-19) ... 79-17
 TC-19 Tel. Rec. ... 97-17
 TC-125 Tel. Rec. ... 95A-13
 TS-15, TS-16, TS-125 Series Tel. Rec. ... 72-12
 TV-10L, TV-10LW (112020) Tel. Rec. ... *
 TV-10PM, TV-10PY (112025, 112022) Tel. Rec. ... *
 TV-12 Series PHOTOFACT Servicer ... 88
 TV-125 (Ch. TV-12) Tel. Rec. ... 68-16
 16 Series Tel. Rec. ... 135-12
 17 Series Tel. Rec. ... 135
 24 Series Tel. Rec. ... 138-11
 32 Series Tel. Rec. ... 11-23
 116 Series Tel. Rec. (See 16 Series) ... 135
 117 Series Tel. Rec. (See Model 119CDM) ... 130
 119C Tel. Rec. (See Model 119CDM) (Also See Prod. Chge. Bul. 43-Set 177-A) ... 130
 119CDM, 119 CM Tel. Rec. ... 130-14
 119MSA, D, G, I, M, R Tel. Rec. (See Model 119CDM) ... 130
 119 RPM Tel. Rec. (See Model 119CDM) ... 130
 317RFM, 317TM Tel. Rec. ... 146-10
 321CF, C2M, CD2M, CD20M, 324CSM (Series 32) Tel. Rec. ... 172-10
 417CS-M, 417CS-0, 417CS-DC, 417TX (Series 417) Tel. Rec. ... 178-15
 421CDM, CM, TX Tel. Rec. (Also See Prod. Chge. Bul. 47-Set 181-1) ... 170-13
 421 Series (Revised) Tel. Rec. ... 198-14
 1020 (See Model 1220 Series) ... 50
 1100-H, 1100-HI ... 20-31
 1101-HB, 1101-HI (Ch. 112002), 1101-HM, 1101-HW, 1101-HY (Ch. 112001) ... 2-9
 1101-HPW ... 41-23
 1105 (Series 10-11) ... 18-29
 1110-HW, 1110-PTW (Series 10-11) ... 18-30
 1121-HW (See Model 1220 Series) ... 50
 1121-HW, LW, MI-0, M2-W, M2-Y, PFM, PFW, PGW, PLW, PLW, PSM (Series 10-11-12) ... 10-31
 1135-PFM, 1135-PLM ... 23-26
 1200 ... 57-20
 1202 (Series 10) ... 55-21
 1204 (Ch. 112021) ... 34-22
 1210M2-M, 1210M2-W, 1210M2-Y, 1210PGM, 1210PLM, 1210PGW (Series 10-11) ... 37-23
 1220 Series ... 50-19
 1235 Series ... 49-23
 1400 (See Model 1200) ... 57
 1407PFM, 1407PLM ... 58-23
 1409M2-M, 1409M2-Y, 1409M3-2W, 1409M3-A, 1409M3-M, 1409PG-W ... 62-20
 1500 ... 132-15
 1507 ... 133-13
 1608 ... 150-12

STUDEBAKER
 AC2111 (S5127) ... 166-15
 AC2113 (S5123) ... 172-11
 S-4624, S-4625 ... 21-32
 S-4626, S-4627 ... 19-32

SUPREME (Lipman)
 711 ... 68-17
 712S ... 63-17
 733 ... 60-19
 738P1 ... 64-13
 750 ... 55-22

SWANK
 5 Tube Radio-phon (DU101) ... 5-21
 ER61 ... 17-33

SYLVANIA

C32M Tel. UHF Conv. 199-13
 1-075 (Ch. 1-139) Tel. Rec. (Also See Prod. Chge. Bul. 48-Set 182-1) 92-8
 1-076 (Ch. 1-108) Tel. Rec. (Also See Prod. Chge. Bul. 2-Set 103-20 and Prod. Chge. Bul. 49-Set 183-1) 96-11
 1-090 (Ch. 1-168) Tel. Rec. (Also See Prod. Chge. Bul. 49-Set 183-1) 99-17
 1-113, 1-114 Tel. Rec. (See Model 1-075) (Also See Prod. Chge. Bul. 48-Set 182-1) 92
 1-124, 1-125 Tel. Rec. (See Model 1-075) (Also See Prod. Chge. Bul. 48-Set 182-1) 92
 1-125-1 (Ch. 1-186) Tel. Rec. (Also See Prod. Chge. Bul. 49-Set 183-1) 113-9
 1-128 (Ch. 1-108) Tel. Rec. (See Model 1-076) (Also See Prod. Chge. Bul. 2-Set 103-20 and Prod. Chge. Bul. 49-Set 183-1) 96
 1-177 (Ch. 1-186) Tel. Rec. (See Model 1-075) (Also See Prod. Chge. Bul. 48-Set 182-1) 92
 1-197 (Ch. 1-139) Tel. Rec. (See Model 1-075) 92
 1-197-1 (Ch. 1-186) Tel. Rec. (See Model 1-125-1) (Also See Prod. Chge. Bul. 49-Set 183-1) 113
 1-210 (Ch. 1-079) Tel. Rec. (See Model 1-075) (Also See Prod. Chge. Bul. 48-Set 182-1) 92
 1-245, 1-246 (Ch. 1-139) Tel. Rec. (See Model 1-075) 92
 1-245-1, 1-246-1 (Ch. 1-186) Tel. Rec. (See Model 1-125-1) (Also See Prod. Chge. Bul. 49-Set 183-1) 113
 1-247 (Ch. 1-169) Tel. Rec. (See Model 1-090) (Also See Prod. Chge. Bul. 49-Set 183-1) 99
 1-247-1 (Ch. 1-231) Tel. Rec. 1-250, 1-251, 1-252 (Ch. 1-215) 103-16
 22B-11 (Ch. 1-507-1) Tel. Rec. 174-13
 22M (Ch. 1-387) Tel. Rec. (See Model 2221M) 137
 22M-1, -2 (Ch. 1-387-1) Tel. Rec. (Also See Prod. Chge. Bul. 31-Set 174-1) 154-12
 22M-11 (Ch. 1-507-1) Tel. Rec. (See Model 22B-11) 174
 23B, B-1, M, M-1 (Ch. 1-387-1) Tel. Rec. (See Model 22M-1) (Also See Prod. Chge. Bul. 41-Set 174-1) 154
 23B-11 (Ch. 1-507-1) Tel. Rec. (See Model 22B-11) 174
 23M-11 (Ch. 1-507-1) Tel. Rec. (See Model 22B-11) 174
 24M (Ch. 1-462-1) Tel. Rec. (See Model 22M-1) 154
 24M-1, M-3 (Ch. 1-477-1) Tel. Rec. (See Model 22M-1) (Also See Prod. Chge. Bul. 41-Set 174-1) 154
 25M, M-1 (Ch. 1-387-1 & Radio Ch. 1-603-1) Tel. Rec. (For TV Ch. only See Prod. Chge. Bul. 41-Set 174-1) 154
 71M (Ch. 1-441) Tel. Rec. (See Model 4120M) (Also See Prod. Chge. Bul. 55-Set 189-1) 124
 71M-1 (Ch. 1-502-1) Tel. Rec. (Also See Prod. Chge. Bul. 42-Set 176-1) 163-12
 72B (Ch. 1-366) Tel. Rec. (See Model 4120M) (Also See Prod. Chge. Bul. 55-Set 189-1) 124
 72B-1 (Ch. 1-502-1) Tel. Rec. (See Model 71M-1) (Also See Prod. Chge. Bul. 42-Set 176-1) 163
 72M-1 (Ch. 1-502-3) Tel. Rec. (See Model 71M-1) (Also See Prod. Chge. Bul. 42-Set 176-1) 163
 72M-2 (Ch. 1-437-3) Tel. Rec. 131
 72M-11 (Ch. 1-502-3) Tel. Rec. (See Model 71M-1) (Also See Prod. Chge. Bul. 42-Set 176-1) 163
 72M-11 (Ch. 1-502-3) Tel. Rec. (See Model 71M-1) (Also See Prod. Chge. Bul. 42-Set 176-1) 163
 73M-3, -5, -6 (Ch. 1-437-3) Tel. Rec. (See Model 5150M) (Also See Prod. Chge. Bul. 41-Set 174-1) 131
 73M-11 (Ch. 1-502-3) Tel. Rec. (See Model 71M-1) (Also See Prod. Chge. Bul. 42-Set 176-1) 163
 74B (Ch. 1-356) Tel. Rec. (See Model 5130B) (Also See Prod. Chge. Bul. 55-Set 189-1) 120
 74B-1 (Ch. 1-437-1) Tel. Rec. (See Model 5150M) (Also See Prod. Chge. Bul. 41-Set 174-1) 131
 74B-2 (Ch. 1-437-2) Tel. Rec. (See Model 5150M) (Also See Prod. Chge. Bul. 41-Set 174-1) 131
 74M (Ch. 1-356) Tel. Rec. (See Model 5130B) 120
 74M-1 (Ch. 1-437-1) Tel. Rec. (See Model 5150M) (Also See Prod. Chge. Bul. 41-Set 174-1) 131
 74M-2, 74M-3 (Ch. 1-437-2) Tel. Rec. (See Model 5150M) (Also See Prod. Chge. Bul. 41-Set 174-1) 131
 75B, M, M-1 (Ch. 1-437-1 and Radio Ch. 1-603-1) Tel. Rec. (For TV Chassis only, see Model 5150M, Set 131) 105B, M (Ch. 1-504-1) Tel. Rec. 105BU, MU (Ch. 1-504-2) Tel. Rec. 120B, BU, M, MU (Ch. 1-510-1, 1-510-2) Tel. Rec. 126B, BU, L, LU, M, MU (Ch. 1-510-1, 1-510-2) Tel. Rec. (See Model 120B) 150A (Ch. 1-437-3) (Codes C06 and up) 187-11
 155A, L, M (Ch. 1-437-3) (Codes C06 and up) (See Model 150A) 187
 172K, KU, M, MU (Ch. 1-508-1, 1-508-2) Tel. Rec. 192-9
 175B, BU, L, LU, M, MU (Ch. 1-508-1, 1-508-2) Tel. Rec. (See Model 172K) 192
 176A, BU, L, LU, M, MU (Ch. 1-508-1, 1-508-2) Tel. Rec. (See Model 172K) 192
 177B, BU, M, MU (Ch. 1-508-1, 1-508-2) Tel. Rec. (See Model 172K) 192
 178B, BU, M, MU (Ch. 1-508-1, 1-508-2) Tel. Rec. (See Model 172K) 192
 200M, MU (Ch. 1-504-1, 1-508-1) Tel. Rec. 225M, MU (Ch. 1-510-1, -2) Tel. Rec. 430L (Ch. 1-254) 165-15
 510B, 510H, 510W (Ch. 1-215) 103
 511B, H, M, 512BR, CH, GR, RE, YE (Ch. 1-601-1) 160-12
 540B, BA, 540H, HA, 540M, MA 119-11
 541B, H, M, 542BR, CH, GR, RE, YE (Ch. 1-602-1) 159-13
 1110X (Ch. 1-329) Tel. Rec. (See Model 1210X) (Also See Prod. Chge. Bul. 47-Set 181-1) 128
 1210X (Ch. 1-381) Tel. Rec. (Also See Prod. Chge. Bul. 44-Set 178-1) 128-16
 2130B, M, W (Ch. 1-462) Tel. Rec. (See Model 5130B) (Also See Prod. Chge. Bul. 55-Set 189-1) 120
 2140B, M (Ch. 1-462) Tel. Rec. (See Model 5130B) (Also See Prod. Chge. Bul. 55-Set 189-1) 120
 2221M (Ch. 1-387) Tel. Rec. 137-13
 4120M (Ch. 1-260) Tel. Rec. (Also See Prod. Chge. Bul. 55-Set 189-1) 124-10
 4130B, E, M, W (Ch. 1-260) Tel. Rec. (See Model 4120M) (Also See Prod. Chge. Bul. 55-Set 189-1) 124
 5130B, M, W (Ch. 1-290) Tel. Rec. (Also See Prod. Chge. Bul. 17-Set 128-1) 120-10

SYLVANIA—Cont.

5140B, M (Ch. 1-290) Tel. Rec. (See Model 5130B) (Also See Prod. Chge. Bul. 17-Set 128-1) 120
 5150M (Ch. 1-274) Tel. Rec. 131-15
 6110X (Ch. 1-261) Tel. Rec. (See Model 4120M) (Also See Prod. Chge. Bul. 55-Set 189-1) 124
 6120B, M, W (Ch. 1-261) Tel. Rec. (See Model 4120M) (Also See Prod. Chge. Bul. 55-Set 189-1) 124
 6130B, M, W (Ch. 1-261) Tel. Rec. (See Model 4120M) (Also See Prod. Chge. Bul. 55-Set 189-1) 124
 6140M, W (Ch. 1-271) Tel. Rec. (See Model 5130B) 120
 7110X (Ch. 1-366) Tel. Rec. (See Model 4120M) (Also See Prod. Chge. Bul. 55-Set 189-1) 124
 7110XB (Ch. 1-441) Tel. Rec. (See Model 4120M) (Also See Prod. Chge. Bul. 55-Set 189-1) 124
 7110XF (Ch. 1-366-66) Tel. Rec. (See Model 4120M) (Also See Prod. Chge. Bul. 55-Set 189-1) 124
 7110XFA (Ch. 1-442) Tel. Rec. (See Model 5150M) 131
 7111M (Ch. 1-441) Tel. Rec. (See Model 4120M) (Also See Prod. Chge. Bul. 55-Set 189-1) 124
 7111MA (Ch. 1-366) Tel. Rec. (See Model 4120M) (Also See Prod. Chge. Bul. 55-Set 189-1) 124
 7120B (Ch. 1-366) Tel. Rec. (See Model 4120M) (Also See Prod. Chge. Bul. 55-Set 189-1) 124
 7120BF (Ch. 1-366-66) Tel. Rec. (See Model 4120M) (Also See Prod. Chge. Bul. 55-Set 189-1) 124
 7120M (Ch. 1-366) Tel. Rec. (See Model 4120M) (Also See Prod. Chge. Bul. 55-Set 189-1) 124
 7120MF (Ch. 1-366-66) Tel. Rec. (See Model 4120M) (Also See Prod. Chge. Bul. 55-Set 189-1) 124
 7120WF (Ch. 1-366-66) Tel. Rec. (See Model 4120M) (Also See Prod. Chge. Bul. 55-Set 189-1) 124
 7120MFA (Ch. 1-442) Tel. Rec. (See Model 5150M) 131
 7130B (Ch. 1-366) Tel. Rec. (See Model 4120M) (Also See Prod. Chge. Bul. 55-Set 189-1) 124
 7130BF (Ch. 1-366-66) Tel. Rec. (See Model 4120M) (Also See Prod. Chge. Bul. 55-Set 189-1) 124
 7130M (Ch. 1-366) Tel. Rec. (See Model 4120M) (Also See Prod. Chge. Bul. 55-Set 189-1) 124
 7130MF (Ch. 1-366-66) Tel. Rec. (See Model 4120M) (Also See Prod. Chge. Bul. 55-Set 189-1) 124
 7130WF (Ch. 1-366-66) Tel. Rec. (See Model 4120M) (Also See Prod. Chge. Bul. 55-Set 189-1) 124
 7130MFA (Ch. 1-442) Tel. Rec. (See Model 5150M) 131
 7140M, W (Ch. 1-356) Tel. Rec. (See Model 5130B) (Also See Prod. Chge. Bul. 55-Set 189-1) 120
 7140MA, 7140WA (Ch. 1-437) Tel. Rec. (See Model 5150M) 131
 7150M (Ch. 1-357) Tel. Rec. (See Model 5150M) 131
 7160B (Ch. 1-357) Tel. Rec. (See Model 5150M) 131
 Ch. 1-139 (See Model 1-075) 92
 Ch. 1-168 (See Model 1-090) 99
 Ch. 1-186 (See Model 1-125-1) 113
 Ch. 1-215 (See Model 1-250) 103
 Ch. 1-254 (See Model 430L) 165
 Ch. 1-260 (See Model 4120M) 124
 Ch. 1-261 (See Model 4120M) 124
 Ch. 1-271 (See Model 5130B) 120
 Ch. 1-274 (See Model 5150M) 131
 Ch. 1-290 (See Model 5130B) 120
 Ch. 1-356 (See Model 5130B) 120
 Ch. 1-357 (See Model 5150M) 131

SYLVANIA—Cont.

Ch. 1-366, 1-366-66 (See Model 4120M) 124
 Ch. 1-381 (See Model 1210X) 128
 Ch. 1-387 (See Model 2221M) 137
 Ch. 1-387-1 (See Model 22M-1) 154
 Ch. 1-437 (See Model 5150M) 131
 Ch. 437-1 (See Model 74B-1) 131
 Ch. 1-437-2 (See Model 74B-2) 131
 Ch. 1-437-3 (See Model 73B-5) 131
 Ch. 1-437-3 (Codes C06 and up) (See Model 150A) 187
 Ch. 1-441 (See Model 4120M) 124
 Ch. 1-442 (See Model 5150M) 131
 Ch. 1-462-1 (See 22-M-1, Ch. 1-387-1) 154
 Ch. 1-502-1 (See Model 71M-1) 163
 Ch. 1-502-2 (See Model 73M-1) 163
 Ch. 1-502-3 (See Model 73M-1) 163
 Ch. 1-504-1 (See Model 105B) *
 Ch. 1-504-2 (See Model 105BU) *
 Ch. 1-507-1 (See Model 22B-11) *
 Ch. 1-508-1, -2 (See Model 172K) 192
 Ch. 1-510-1, -2 (See Model 120B) *
 Ch. 1-601-1 (See Model 511B) 160
 Ch. 1-602-1 (See Model 541B) 159
 Ch. 1-603-1 *
TAPMASTER (Also See Recorder Listings) PA-1 186-14
TECH-MASTER 1930 Tel. Rec. 159-14
TELECHRON 8H67 "Musalarm" 44-23
TELECOIN M5T54 25-28
TELECRAFT 30T14A-056 Tel. Rec. (Similar to Chassis) 119-3
 38T12A-058 Tel. Rec. (Similar to Chassis) 109-1
 317T3 Tel. Rec. (Similar to Chassis) 72-4
 318T4 Tel. Rec. (Similar to Chassis) 85-3
 318T4S Tel. Rec. (Similar to Chassis) 85-3
 318T4R72 Tel. Rec. (Similar to Chassis) 85-3
 318T6A Tel. Rec. (Similar to Chassis) 85-3
 318T6A-950 Tel. Rec. (Similar to Chassis) 85-3
 318T9A-900 Tel. Rec. (Similar to Chassis) 78-4
 318T6A Tel. Rec. (Similar to Chassis) 85-3
 318T9A-918 Tel. Rec. (Similar to Chassis) 78-4
 318T10A-916 Tel. Rec. (Similar to Chassis) 78-4
 2318T6A 954 Tel. Rec. (Similar to Chassis) 85-3
 2318T9A-912 Tel. Rec. (Similar to Chassis) 78-4
TELE-KING K21 (Ch. TVJ) Tel. Rec. 177-13
 K72 (Ch. TVJ) Tel. Rec. (See Model K21) 177
 K731 (Ch. TVJ) Tel. Rec. (See Model K21) 177
 KC21 (Ch. TVJ) Tel. Rec. (See Model K21) 177
 KC71 (Ch. TVJ) Tel. Rec. (See Model K21) 177
 KD21M (Ch. TVJ) Tel. Rec. (See Model K21) 177
 KD22B (Ch. TVJ) Tel. Rec. (See Model K21) 177
 KD71 (Ch. TVJ) Tel. Rec. (See Model K21) 177
 KD72B (Ch. TVJ) Tel. Rec. (See Model K21) 177
 T-516 Tel. Rec. 141
 16CD3CR Tel. Rec. (For PB only See Model 162) 129
 114 Tel. Rec. 141-13
 116, 116C Tel. Rec. 141
 117, 117C, 117L Tel. Rec. (See Model 114) 141
 117CA, CAF Tel. Rec. (For TV Ch. only, see Model 114) 141
 162 Tel. Rec. 129-12
 172 (Ch. TVG) Tel. Rec. (See Model 201) 131
 174 (Ch. TVG) Tel. Rec. (See Model 201) 131
 201, 202 Tel. Rec. 131-16
 203 (Ch. TVG) Tel. Rec. (See Model 201) 131
 210 Tel. Rec. *
 310 Tel. Rec. *
 410 Tel. Rec. 88-12
 416 Tel. Rec. (See Model 162) 129
 410 Tel. Rec. 88
 512 Tel. Rec. (See Model 410) 88

SYLVANIA—Cont.

Ch. 1-366, 1-366-66 (See Model 4120M) 124
 Ch. 1-381 (See Model 1210X) 128
 Ch. 1-387 (See Model 2221M) 137
 Ch. 1-387-1 (See Model 22M-1) 154
 Ch. 1-437 (See Model 5150M) 131
 Ch. 437-1 (See Model 74B-1) 131
 Ch. 1-437-2 (See Model 74B-2) 131
 Ch. 1-437-3 (See Model 73B-5) 131
 Ch. 1-437-3 (Codes C06 and up) (See Model 150A) 187
 Ch. 1-441 (See Model 4120M) 124
 Ch. 1-442 (See Model 5150M) 131
 Ch. 1-462-1 (See 22-M-1, Ch. 1-387-1) 154
 Ch. 1-502-1 (See Model 71M-1) 163
 Ch. 1-502-2 (See Model 73M-1) 163
 Ch. 1-502-3 (See Model 73M-1) 163
 Ch. 1-504-1 (See Model 105B) *
 Ch. 1-504-2 (See Model 105BU) *
 Ch. 1-507-1 (See Model 22B-11) *
 Ch. 1-508-1, -2 (See Model 172K) 192
 Ch. 1-510-1, -2 (See Model 120B) *
 Ch. 1-601-1 (See Model 511B) 160
 Ch. 1-602-1 (See Model 541B) 159
 Ch. 1-603-1 *
TAPMASTER (Also See Recorder Listings) PA-1 186-14
TECH-MASTER 1930 Tel. Rec. 159-14
TELECHRON 8H67 "Musalarm" 44-23
TELECOIN M5T54 25-28
TELECRAFT 30T14A-056 Tel. Rec. (Similar to Chassis) 119-3
 38T12A-058 Tel. Rec. (Similar to Chassis) 109-1
 317T3 Tel. Rec. (Similar to Chassis) 72-4
 318T4 Tel. Rec. (Similar to Chassis) 85-3
 318T4S Tel. Rec. (Similar to Chassis) 85-3
 318T4R72 Tel. Rec. (Similar to Chassis) 85-3
 318T6A Tel. Rec. (Similar to Chassis) 85-3
 318T6A-950 Tel. Rec. (Similar to Chassis) 85-3
 318T9A-900 Tel. Rec. (Similar to Chassis) 78-4
 318T6A Tel. Rec. (Similar to Chassis) 85-3
 318T9A-918 Tel. Rec. (Similar to Chassis) 78-4
 318T10A-916 Tel. Rec. (Similar to Chassis) 78-4
 2318T6A 954 Tel. Rec. (Similar to Chassis) 85-3
 2318T9A-912 Tel. Rec. (Similar to Chassis) 78-4
TELE-KING K21 (Ch. TVJ) Tel. Rec. 177-13
 K72 (Ch. TVJ) Tel. Rec. (See Model K21) 177
 K731 (Ch. TVJ) Tel. Rec. (See Model K21) 177
 KC21 (Ch. TVJ) Tel. Rec. (See Model K21) 177
 KC71 (Ch. TVJ) Tel. Rec. (See Model K21) 177
 KD21M (Ch. TVJ) Tel. Rec. (See Model K21) 177
 KD22B (Ch. TVJ) Tel. Rec. (See Model K21) 177
 KD71 (Ch. TVJ) Tel. Rec. (See Model K21) 177
 KD72B (Ch. TVJ) Tel. Rec. (See Model K21) 177
 T-516 Tel. Rec. 141
 16CD3CR Tel. Rec. (For PB only See Model 162) 129
 114 Tel. Rec. 141-13
 116, 116C Tel. Rec. 141
 117, 117C, 117L Tel. Rec. (See Model 114) 141
 117CA, CAF Tel. Rec. (For TV Ch. only, see Model 114) 141
 162 Tel. Rec. 129-12
 172 (Ch. TVG) Tel. Rec. (See Model 201) 131
 174 (Ch. TVG) Tel. Rec. (See Model 201) 131
 201, 202 Tel. Rec. 131-16
 203 (Ch. TVG) Tel. Rec. (See Model 201) 131
 210 Tel. Rec. *
 310 Tel. Rec. *
 410 Tel. Rec. 88-12
 416 Tel. Rec. (See Model 162) 129
 410 Tel. Rec. 88
 512 Tel. Rec. (See Model 410) 88

TELE-KING—Cont.

516 Tel. Rec. (See Model 114) 141
 612 Tel. Rec. (See Model 410) 88
 710 Tel. Rec. (See Model 410) 88
 712 Tel. Rec. (See Model 410) 88
 716 Tel. Rec. (See Model 162) 129
 816-3CR Tel. Rec. (For PB only See Model 162) 129
 916C Tel. Rec. (See Model 162) 129
 916CAF Tel. Rec. (For TV Ch. only, see Model 162) 129
 919C Tel. Rec. (See Model 114) 141
 919CAF Tel. Rec. (For TV Ch. only, see Model 114) 141
 920 (Ch. TVG) Tel. Rec. (See Model 201) 131
 1014 (Ch. TVG) Tel. Rec. (See Model 201) 131
 1016 (Ch. TVG) Tel. Rec. (See Model 201) 131
 Ch. TVG Tel. Rec. (See Model 201) 131
 Ch. TV (See Model K21) 177
TELEQUIP Ch. 12TR, 14T, 14TR, 16T, 16TR, 19T, 19TR *
 Tel. Rec. *
 C316MF Tel. Rec. *
 C317MF Tel. Rec. *
 C320MF Tel. Rec. *
 C516D Tel. Rec. *
 C517D Tel. Rec. *
 C519D Tel. Rec. *
 C617D Tel. Rec. *
 C619D Tel. Rec. *
 C620D Tel. Rec. *
 C720D Tel. Rec. *
 C820D Tel. Rec. *
 T214D Tel. Rec. *
 T217L Tel. Rec. *
 T416D Tel. Rec. *
 T417D Tel. Rec. *
 T417MF Tel. Rec. *
 5135, 5136, 5140A 11-24
TELESON (Medco) 1635 20-22
 1636 21-33
 1642 20-23
 1643 21-34
TELE-TONE TV-49 Television Rec. 56-22
 TV-170 Tel. Rec. 83-12
 TV-210 Tel. Rec. 90-11
 TV208TR Tel. Rec. 95-6
 TV-209 Tel. Rec. (See Model TV-249) (Also See Prod. Chge. Bul. 21-Set 136-1) 57
 TV-210 Tel. Rec. (See Model TV-249) (Also See Prod. Chge. Bul. 21-Set 136-1) 57
 TV-220 Tel. Rec. (See Model TV208TR) 95
 TV-245, 246 Tel. Rec. 249 Tel. Rec. (See Model TV-249) (Also See Prod. Chge. Bul. 21-Set 136-1) 57-21
 TV-250 Tel. Rec. 91-13
 TV-254 Tel. Rec. (See Model TV-250) 91
 TV-255, TV-256 (Ch. 5) Tel. Rec. 101-13
 TV259 Tel. Rec. (See Model TV249) 57
 TV-282 Tel. Rec. 71-14
 TV-283 Tel. Rec. (See Model TV-285) 87
 TV-284 Tel. Rec. 87-10
 TV-285 Tel. Rec. 87-13
 TV-286, 287, 288 Tel. Rec. (See Model TV-284) 93
 TV-300, TV-301 (Ch. TAA, TAB) Tel. Rec. 99A-12
 TV-302, TV-303 (Ch. TAA, TAB) Tel. Rec. (See Model TV-300) 99A
 TV-304, TV-305 (Ch. TAA, TAB) Tel. Rec. (See Model TV-300) 99A
 TV-304, TV-305 (Ch. TX) Tel. Rec. (See Model TV-300) 107
 TV-306, TV-307 (Ch. TY, TZ) Tel. Rec. 104-12
 TV-308 (Ch. TAC) Tel. Rec. 109-14
 TV314 (Ch. TAJ) Tel. Rec. 125-12
 TV-315 (Ch. TAA, TAB) Tel. Rec. 115-13
 TV-316 (Ch. TAH) Tel. Rec. 135-13
 TV-317 Tel. Rec. *
 TV318 (Ch. TAM) Tel. Rec. 124-11
 TV322, TV323 (Ch. TAM) Tel. Rec. (See Model TV318) 124
 TV324, TV325, TV326 (Ch. TAP, TAP-1) Tel. Rec. 127-12
 TV328, TV329 (Ch. TAP, TAP-1, TAP-2) Tel. Rec. (See Model TV324) 127
 TV-330, TV-331, TV-332, TV-333 (Ch. TAO) Tel. Rec. 145-11
 TV335, TV336 (Ch. TAP, TAP-1, TAP-2) Tel. Rec. (See Model TV324) 127

TELE-TONE—VIEWTONE

TELE-TONE—Cont.

TV340 (Ch. TAP, TAP-1, TAP-2) Tel. Rec. (See Model TV324) 127

TV345 (Ch. TAP, TAP-1, TAP-2) Tel. Rec. (See Model TV324) 127

TV348, TV349 (Ch. TAP, 2) Tel. Rec. (See Model TV324) 127

TV-352 Tel. Rec. (See Model TV-324) 127

TV-355 (Ch. 8001, 8002, 8003) Tel. Rec. (See Model TV-330) 145

TV-355-U (Ch. 8010, 8016) Tel. Rec. * (See Model TV-355-U) 145

TV-357-U (Ch. 8010, 8016) Tel. Rec. * (See Model TV-355-U) 145

TV-358, TV-359 (See Model TV-324) 127

TV-374-U (Ch. 8010, 8016) Tel. Rec. (See Model TV-355-U) 145

TV-360, TV-365 (Ch. 8001, 8002, 8003) Tel. Rec. (See Model TV-330) 145

TV-365-U (Ch. 8010, 8016) Tel. Rec. * (See Model TV-355-U) 145

TV374 (Ch. 8001, 8002, 8003) Tel. Rec. (See Model TV330) (Also see Prod. Chge. Bul. 35, Ser 164-1) 145

TV-374-U (Ch. 8010, 8016) Tel. Rec. (See Model TV-355-U) 145

TV-384-U (Ch. 8010, 8016) Tel. Rec. * (See Model TV-355-U) 145

TV-385-U, TV-386-U (Ch. 8013, 8015) Tel. Rec. (See Model TV-355-U) 145

100, 100-A, 101, 109 (Ch. Series A) 39-26

109 (Ch. Series J) 8-30

110 (See Model 117-A) 1

111, 113 (See Model 100) 1

117-A (Ch. Series "D") 1-35

119, 120 (See Model 117-A) 1

122, 123 (See Model 100) 1

124 (See Model 117-A) 1

125 (See Model 100) 1

126 (See Model 117-A) 1

127, 130, 131 (See Model 100) 39

132 (See Model 117-A) 1

133 11-25

134 13-32

135 14-29

138 (Ch. Series N) 23-27

139, 140, 141 (Ch. Series H) (See Model 135) 14

142, 143, 144 (See Model 145) 23

145 (Ch. Series "R") 23-28

148 (Ch. Series S) 24-26

149 (Ch. Series H) 14

150 (Ch. Series T) 38-25

151 (Ch. Series S) 24

152 (Ch. Series R) 23

156 (Ch. Series H) 35-23

157 (Ch. Series H) 14

157 (Ch. Series AE) 49-24

158 (Ch. Series AT) 59-20

159 (Ch. Series AA) 38-26

160 (Ch. Series V) 36-24

161, 162 (Ch. Series T) 38

163, 164 (Ch. Series H) 14

166 (Ch. AE) 49-20

167, 168, 171 (Ch. Series T) (See Model 150) 38

172 (Ch. Series U) 35

174 (Ch. Series T) 38

176 (Ch. Series U) 35

182 51-22

183 53-24

185 (Ch. Series AH) 52-21

190 (Ch. Series AZ) 61-19

195 (Ch. Series BH) 71-15

198 (See Model 158) 59

200 (Ch. Series AZ) 61

201 (Ch. Series AX) 74-9

205 (Ch. Series BD) 73-12

206 127-11

214 (Ch. Series AZ) 61

215 (Ch. Series BD) (See Model 205) 73

228 (Ch. BL) 144-13

232 (Ch. Series BP) (See Model 205) 73

235 (Ch. BG) 141-14

Ch. Series A (See Model 100) 39

Ch. Series AA 38

Ch. Series AE 49

Ch. Series AG 50

Ch. Series AH 52

Ch. Series AT 59

Ch. Series AX (See Model 201) 74

Ch. Series AZ 61

TELE-TONE—Cont.

Ch. Series BD 73

Ch. Series BH 71

Ch. BL (See Model 228) 144

Ch. BQ (See Model 235) 141

Ch. Series C (See Model 134) 13

Ch. Series CA (See Model 133) 11

Ch. Series D (See Model 117A) 1

Ch. Series H (See Model 135) 14

Ch. Series K (See Model 109) 8

Ch. Series L (See Model 138) 23

Ch. Series R (See Model 145) 23

Ch. Series S (See Model 148) 24

Ch. Series Y (See Model 150) 38

Ch. TAA, TAB (See Model TV-315) 115

Ch. TAC (See Model TV-308) 109

Ch. TAH (See Model TV-316) 135

Ch. TAJ (See Model TV314) 125

Ch. TAM (See Model TV318) 124

Ch. TAO (See Model TV-330) 145

Ch. TAP, TAP-1, TAP-2 (See Model TV324) 127

Ch. TS (See Model TV-255) 101

Ch. TW, TX (See Model TV-300) 107

Ch. TY, TZ (See Model TV-306) 104

Ch. Series U (See Model 156) 35

Ch. Series Y (See Model 160) 36

Ch. 8001, 8002, 8003 (See Model TV-330) 145

Ch. 8010 (See Model TV-355-U) *

Ch. 8013 (See Model TV-355-U) *

Ch. 8015, 8016 (See Model TV-355-U) *

TELE-VOGUE (See Muntz)

TELEVOX

RP 22-29

27J8-2W 20-32

27K-W 20-33

27-P-T 22-28

TEL-VAR (See Audar)

TEMPLE

E-301 21-35

E-510 2-3

E-511 11-26

E-512, E-514 (See Model E-510) 2

E-519 (See Model E-510) 2

F-301 12-26

F-311 9-32

F-616 5-38

F-617 12-27

F-410 27-28

G-415 43-18

G-418, G-419 26-25

G-513 23-29

G-515 17-34

G-516 18-31

G-518 29-27

G-520 28-33

G-522 26-26

G-619 22-30

G-622 44-24

G-721 (See Model G-722) 24

G-722 (See Model G-722) 24

G-723 38-27

G-725 34-23

G-1430 43-19

G-4108 (See Model G-418) 26

G-7205 (See Models G-721, G-722, G-723) 24

H-411 47-23

H-521 (See Model G-521) 28

H-622 (See Model G-622) 44

H-727 (See Model G-725) 34

TV-1776, TV-1777, TV-1778, TV-1779 Tel. Rec. 66-16

TEMPOTONE

500 E Series 2-8

TEMPLOTONE (See Temple)

THORDARSON

T-30W08A 8-31

T-31W10A 30-30

T-31W10-AX 57-22

T-31W25A 50-33

T-31W50A 20-34

T-32W00, T-32W10 76-18

THORENS (See Record Changer Listing)

TOPE PAK

AC8HF 24-28

TRAD

C-2020, C-2420, CD-2020 Tel. Rec. 173-14

T-20, A Tel. Rec. 133-14

T-20-E Tel. Rec. (See Model C-2020) 165-17A

T-1720 Tel. Rec. (See Model C-2020) 173

T-1853, A Tel. Rec. 200-10

TF635H Tel. Rec. *

TRANSVISION

Ch. Model A Tel. Rec. 107-11

Ch. A-3 Tel. Rec. 130-15

Ch. A-4 Tel. Rec. 192-10

WR5-3 Tel. Rec. 112-10

TRANSVUE

17X, 17XT Tel. Rec. (Similar to Chassis) 132-8

20XC, 20XT Tel. Rec. (Similar to Chassis) 132-8

160-L (Ch. 12AX12) *

601 (Ch. 16AX23, 25, 26) (Similar to Chassis) 99-14

610 (Ch. 16AX23, 25, 26) Tel. Rec. (Similar to Chassis) 99-14

1400T Tel. Rec. (Similar to Chassis) 132-8

1700C, T Tel. Rec. (Similar to Chassis) 132-8

2000C Tel. Rec. (Similar to Chassis) 132-8

12AX12 (See Model 160-L) *

TRAV-LER (Also see Record Changer Listing)

10T Tel. Rec. 86-11

12510, A Tel. Rec. 108-13

12T Tel. Rec. (See Model 10T) 86

14850, A, 14C50, A Tel. Rec. (See Model 12L50) 108

16G50A Tel. Rec. (See Model 12L50) 108

16R50A, 16T50A Tel. Rec. (See Model 12L50) 108

16T Tel. Rec. (See Model 10T) (Also see Prod. Chge. Bul. 31, Ser 156-3) 86

20A50 Tel. Rec. 146-11

62R50, 63R50 Tel. Rec. 150-13

64R50, 64R50-1, 64R50-2 Tel. Rec. (See Model 20A50) 146

65G50, 65G50-1, 65G50-2 Tel. Rec. (See Model 20A50) 146

75A50, 75A50-1, 75A50-2 Tel. Rec. (See Model 20A50) 146

114-1A, 2 (Ch. 32A1) Tel. Rec. (See Model 62R50) 150

117-3, -4, -6 (Ch. 32A1) Tel. Rec. (See Model 62R50) 150

119-5 (Ch. 32A1) Tel. Rec. (See Model 62R50) 150

217, -10, 11, -12, -14 (Ch. 33A2) Tel. Rec. 171-11

217-15, 217-16 (Ch. 34A2) Tel. Rec. (See Model 217-15) 170-14

217-25 (Ch. 34A2) Tel. Rec. (See Model 217-15) 170

219-8A, 219-8B (Ch. 31A2) Tel. Rec. 162-14

220-9, 9A, 9B (Ch. 33A2) Tel. Rec. (See Model 217-10) 171

220-22, -23, 24, -26 (Ch. 34A2) Tel. Rec. (See Model 217-10) 170

5000 (See Model 50001) 11

50001 11-27

5002 Series (Ch. 109) 12-28

5007, 5008, 5009 (Ch. 104) 1-36

5010, 5011, 5012 (Ch. 105) 2-5

5015 36-25

5019 23-30

5020 (Ch. 800) 11-28

5021 43-20

5022 101-14

5027 31-30

5028 34-24

5029 33-29

5030, 5031 32-25

5036 54-19

5049 45-24

5051 32-26

5054 36-26

5056-A 90-12

5060, 5061 116-11

5066 42-24

5170 163-13

6040 49-25

6050 56-23

7000, 7001 59-21

7003 (Ch. 501) 12-29

7014 (See Model 7000) 59

7016, 7017 84-11

7023 83-13

7036 112-11

Ch. 11A2 (See Model 219-8A) 162

Ch. 32A1 (See Model 62R50) 150

Ch. 33A2 (See Model 217-15) 171

Ch. 34A2 (See Model 217-15) 170

Ch. 105 (See Model 5007) 1

Ch. 109 (See Model 5001) 2

Ch. 501 (See Model 7003) 12

Ch. 800 (See Model 5021) 11

TRELA

HW301 14-28

TRUETONE

D1034A, B, C (See Model D1046A) 102

D1046A, B, C (See Model D1046C) 102-15

D1046C, D (See Model D1046A) 102

D1090 Tel. Rec. *

D1092 Tel. Rec. (Similar to Chassis) 108-7

TRUETONE—Cont.

D1234A, B 189-15

D1240A 187-12

D1612 28-34

D1644 12-30

D1645 (Factory 26A76-650) 6-33

D1747, D1748 32-27

D1752 (Factory 7901-14) 34-25

D1835 (Factory Model 26A85-856) 44-25

D1836, D1836A (Factory 26A85-856) 45-25

D1840 (Fact. No. 138PCXM) 46-24

D1845 31-31

D1846A, B, C 40-23

D1850 (Series A) 51-23

D1949 60-20

D1950, D1951 (See Model D1850) 51

D1952 (See Model D1949) 60

D1990, D1992 (Factory No. 7AF22) Tel. Rec. 69-13

D1991, B, D1993, B, D1994 Tel. Rec. 77-11

D1994 Tel. Rec. (See Model D2983) 68

D1997A Tel. Rec. *

D1998A Tel. Rec. *

D2017, D2018 101-15

D2020 106-15

D2025A (Fact. Mod. 26A9-906) 83-14

D2027A 97-18

D2050A Tel. Rec. *

D-2102A, B 200-11

D-2108A, D-2109A 199-14

D2145 197-13

D222A 196-6

D2237A 182-15

D2255 197-14

D2263 190-14

D-2383 199-15

D2603 (Factory No. 461) 13-33

D2604 13-34

D2605 (Factory Model 2AW2) 9-34

D2606 65-15

D2612 (Code SW-9022-G) 3-9

D2613 13-37

D2615 (Factory Model 6D110) 2-18

D2616 (Factory Model 6D117) 10-32

D2616-B 31-32

D2619 (Factory No. 2701) 27-29

D2620 4-32

D2621 14-30

D2622 11-29

D2623 2-6

D2624 (Factory 27D14-600) 52-22

D2626 (Fact. No. 457-2) 52-22

D2630 (Factory 27D14-602 Issue A) 1-10

D2634 12-31

D2640 (Factory No. 4591) 43-21

D2642 11-30

D2644 (Factory No. 101C) 11-30

D2645 4-39

D2646 (Factory 4B19) 2-23

D2663 (Ch. 11) 11-31

D2665 (Factory 4B11A Series A) 22-31

D2692 27-30

D2709 (Factory No. 470) 27-30

D2710 (Factory No. 472) 23-31

D2718 (Factory No. 227D14-638U) 23-32

D2743 (See Model D1645) 6

D2748 (Ch. 7156) 26-27

D2806, D2807 (Factory Model 1) 44-26

D2818 (Factory No. 24D24-7308B) 36-27

D2819 48-25

D2819 (Factory No. 26A82-738) 35-24

D2851 38-28

D2906 (Factory No. 189) 69-14

D2910 (Factory No. 60F21) 59-23

D2919 (Fact. No. 60F21) 73-13

D2963 11-10

D2982 Tel. Rec. *

D2983 Tel. Rec. *

D2985 Tel. Rec. (See Model 1990) 69

D2987 Tel. Rec. *

D2988, D2989 Tel. Rec. *

D2990 Tel. Rec. *

D3210A 190-15

D3265A 189-16

D3615 (Factory 25B2D-606) 18-32

D3619 (Factory 5P110) 10-33

D3630, D3630N 19-33

D3720 24-29

D3721 (Factory 1108X) 32-28

D3722 (Fact. No. 472) 51-24

D3809 (Factory No. 178) 43-22

D3810 37-27

D3811 (Fact. No. 1148XH) 47-24

D3840 49-26

D3910 (Fact. Model 140611) 74-10

D-4118, B 200-12

D4142A 142-14

D4620 (Factory No. 5C12) 26-28

D4630 (Factory 26C19-61) 7-28

D4818 (Fact. No. 134DX) 45-26

D4832 (Fact. No. 25C2-821) 47-25

D4842 (Fact. No. 26C21-81) 50-21

2D1088A Tel. Rec. 105-11

2D1088B Tel. Rec. 145-A-1

2D1089A Tel. Rec. 113-10

2D1089B Tel. Rec. 136-14

2D1091 Tel. Rec. 161-10

2D1093A, 2D1094A Tel. Rec. 119-12

2D1095A Tel. Rec. 134-11

2D1095A (Ch. 16AX27) Tel. Rec. *

TRUETONE—Cont.

2D1185A, B, C, D, E, Tel. Rec. (Also see Prod. Chge. Bul. 43—Set 177-1 and see Prod. Chge. Bul. 46—Set 180-1) 154-13

2D1190A, B Tel. Rec. 147-12

2D1191A (Ch. BRC20AY22) Tel. Rec. *

2D1194A Tel. Rec. 151-11

2D1195A (Ch. 16AX216) Tel. Rec. *

2D-1224A (Ch. 20AY21) Tel. Rec. *

2D1225A (Ch. 21AY21A) Tel. Rec. *

2D-1228A (Ch. 20AY21) Tel. Rec. (See Model 2D-1224A) *

2D1230B Tel. Rec. (Also see Prod. Chge. Bul. 59—Set 193-1) 185-14

2D-1235A (Ch. 17MS34S) Tel. Rec. 188-13

2D1235B, C, D, E Tel. Rec. *

2D1315A, B Tel. Rec. *

2D1325A, B Tel. Rec. *

2D1344A, B Tel. Rec. *

2D-1354A (Ch. 9210P) Tel. Rec. 194-13

2D2042A Tel. Rec. (See Model 2D1091) 161

2D2047B Tel. Rec. (See Model 2D1091) 161

2D2049A (Ch. 16AY210) Tel. Rec. *

2D2052 Tel. Rec. (See Model 2D1095) 134

2D2052A, B (Ch. 16AY210) Tel. Rec. *

2D2052C (Ch. 17AY23) Tel. Rec. *

2D2052D, E (Ch. 17AY23) Tel. Rec. *

2D2053 Tel. Rec. 120-11

2D2149A (Ch. 17AY212) Tel. Rec. 177-14

2D2152A (Ch. 17AY26) Tel. Rec. *

2D2191A Tel. Rec. *

2D2215A (Ch. 21AY21A) Tel. Rec. *

2D2219A Tel. Rec. 179-13

2D2223A (Ch. 21AY21A) Tel. Rec. *

2D2312A, B Tel. Rec. *

2D2314A, B Tel. Rec. *

2D2321A, B Tel. Rec. *

2D2322A, B Tel. Rec. *

2D2333A, B, C, D Tel. Rec. *

ULTRADYNE

L-46 4-21

UNITED MOTORS SERVICE (See Delco or Buick, or General, Oldsmobile and Pontiac)

U. S. TELEVISION

CI-6030 Tel. Rec. 99A-12

CI9031 Tel. Rec. (See Model CI6030) 99A

T-10823 Tel. Rec. 89-15

TI6030 Tel. Rec. (See Model CI6030) 99A

TI9031 Tel. Rec. (See Model CI6030) 99A

5A16, 5B16, 5C16, 5D66MPA (See Model 5C66 Early) 17

5A66, 5B66, 5C66, 5D66MPA 24-30

5C66 Early (See Model 5D66MPA) 26-29

UNITONE

88 5-26

UNIVERSAL CAMERA (See Record Changer Listing)

UTAH (See Record Changer Listing)

V-M (Also see Record Changer Listing)

110 191-19

150 139-15

160 187-13

1970 159-15

1975 165-16

980 138-12

985 166-16

1001-A 10-34

VAN-CAMP

576-1-6A 7-29

VIDEO CORP. OF AMERICA (See Videola)

VIDSODYNE

10FM, 10TV, 12FM, 12TV Tel. Rec. (See Model 69-15) 69-15

VIDEOLA

VS-160, VS-161 Tel. Rec. 92-9

VS-165, VS-166, VS-167, VS-168 Tel. Rec. (See Model VS-160) 92

1930R-Tel. Rec. *

2430 Tel. Rec. *

5219 Tel. Rec. *

VIDEO PRODUCTS

630-DXC Tel. Rec. 176-13

630-DX24C Tel. Rec. (See Model 630-DXC) 176

630FM3B, 630K3B Tel. Rec. *

630-K3C Tel. Rec. (See Model 630-DXC) 176

630-K24C Tel. Rec. (See Model 630-DXC) 176

VIEWTONE

RC-201A, RRC-201 11-32

VISION MASTER

14MC, WT Tel. Rec. (Similar to Chassis) 117-8
 16MC, 16MT, 16MXC, 16MXCS, 16MXT, 16MXTS Tel. Rec. (Similar to Chassis) 117-8
 17MC, 17MT, 17MXC, 17MXCS, 17MXT, 17MXTS Tel. Rec. (Similar to Chassis) 117-8

VIZ 14-31

VOGUE 11-33
 Ch. Models 553R, 554R 8-32

WARWICK (See Clarion)

WATTERSON
 ARC-4591A 16-36
 PA-4585, APA-4587 3-2
 RC-4581 16-35
 4581 3-2
 4582 6-34
 4782 24-31
 4790 16-34
 4800 43-23

WAVEFORMS
 A-20 191-20
 C-5 (See Model A-20) 191

WEBSTER-CHICAGO (Also see Changer and Recorder Listings)
 66-1A 34-26
 100-608 121-14
 100-621 113-31
 130 119-13
 161-1 53-23
 166 159-16
 288 117-14
 362 105-12
 760 111-12
 762 (See Model 362) 105

WEBSTER ELECTRIC (Also see Recorder Listing)
 81-15, 81-15A 142-15
 82-25, 82-25A, 83-25 143-15
 84-25 145-12
 85-25 144-14

WEBSTER (Telohome)
 W606M 56-24
 604M 57-23

WELLS-GARDNER
 317G534C-218 Tel. Rec. 195-12
 317G534C-220 Tel. Rec. 195-12
 317G534C-278 Tel. Rec. 195-12
 321MS31C-222, -224 Tel. Rec. 194-14
 321MS31C-272, -274, -276 Tel. Rec. (See Model 321MS31C-222) 194
 321MS31C-280, -282, -284 Tel. Rec. (See Model 321MS31C-222) 194
 321MS31C-298 Tel. Rec. (See Model 321MS31C-222) 194

WESTERN AUTO (See Truetone)

WESTINGHOUSE (Also see Record Changer Listings)
 H-104, H-105 4-11
 H-104A, H-105A, H-107A, H-108A 21-36
 H-107, H-108, H-110, H-111 4-19
 H-113, H-114, H-116 (See Model H-117) 11
 H-117, H-119 11-34
 H-122 6-35
 H-122A, H-122B (See Model H-122) 6
 H-125, H-126 3-19
 H-130 (See Model H-122) 6
 H-133 14-34
 H-137 (See Model H-138) 6
 H-138 6-36
 H-147 31-33
 H-148 15-37
 H-148A (See Model H-148) 15
 H-153, H-153A (Ch. V-2103) 35-25
 H-154 (See Model H-104A) 21
 H-155 (See Model H-153) 35
 H-156 (See Model H-153) 35
 H-157 (Ch. V-2122) 33-31
 H-161 (Ch. V-2118) 34-27
 H-162 (See Model H-117) 11
 H-164 (Ch. V-2119-1) 36-28
 H-165 32-29
 H-166, H-167 (See Model H-164) 36
 H-168, H-168A, H-168B (Ch. V-2118) 34
 H-169 (Ch. V-2124-1) 37-24
 H-171, H-171A, H-171C (Ch. V-2103) 35
 H-178 (Ch. V-2123) 35-26
 H-181 Tel. Rec. *
 H-182 (Ch. V-2128), (Ch. V-2128-1) 53-25
 H-183, H-183A 48-26
 H-184 (See Model H-153) 35
 H-185 (Ch. V-2131, V-2131-1) 54-20
 H-186M, H-187 (Ch. V-2132) 60-21
 H-188 (Ch. V-2133) 51-25
 H-190, H-191, H-191A (Ch. V-2134) 59-23
 H-195 (See Model H-185) 54
 H-196 Tel. Rec. 65-17
 H-196A (CHV-2130-1) Tel. Rec. (See Model H-196) 65
 H196A (DX) (Ch. V-2130-1DX or V-2130-2DX and Radio Ch. V-2137) Tel. Rec. (See Model H196A (DX)) 84
 H207B (DX) (Ch. V-2130-2DX or V-2130-2DX and Radio Ch. V-2137) Tel. Rec. (See Model H196A (DX)) 84
 H-210, H-211 (Ch. V-2144, V-2144-1) 61-20
 H-212 (Ch. V-2137) (See Model H-203) 62
 H-214, H-214A (Ch. V-2149-3) 75-16
 H-216, H-216A (Ch. V-2146-05, V-2146-45, V-2149-1) 97A-14
 H-217, H-217A (Ch. V-2146-11DX, V-2137, V-2191) Tel. Rec. (Supp. to H-217B, Set 91) 99A-14
 H-217B (Ch. V-2146-35DX, V-2137, V-2149) Tel. Rec. 91-14
 H-220 (See Model H-190) 59
 H-223 (Ch. V-2150-01, V-2150-02) Tel. Rec. 78-14
 H-225 (DX) (Ch. V-2130-31DX or V-2130-32DX) Tel. Rec. (See Model H196A (DX)) 84
 H-224 (Ch. 2146-21DX, 2146-25DX, 2149) Tel. Rec. (See Model H-217B) 91
 H-231 (Ch. 2150-51 and V-2137-3 or V-2137-3S, V-2149-2) Tel. Rec. 99A-14
 H-242 (Ch. 2150-31) Tel. Rec. 97A-14
 H-251 (Ch. V-2150-81, -82, -84) Tel. Rec. 99A-14
 H300T5, H301T5 88-14
 H-302P5 (Ch. V-2151-1), H303P4, H304P4 (Ch. V-2153) 89-16
 H-307T7, H-308T7 (Ch. V-2146) 100-13
 H-309P5, H-309PSU (Ch. V-2156) 101-16
 H-310T5, H-310TSU, H-311T5, H-311TSU (Ch. V-2161, V-2161U) 99-18
 H-312P4, H-312PAU, H-313P4U, H-314P4, H-314PAU, H-315P4, H-315PAU (Ch. V-2153-1) 98-13
 H-316C7 (Ch. V-2136-1) 112-13
 H-317C7 (Ch. V-2136-1) (See Model H316C7) 112
 H-318T5, U (Ch. V-2157, U) 117-15
 H-320T5, U (Ch. V-2157, U) (See Model H-318T5) 117
 H-321T5, U (Ch. V-322T5, U) (See Model H-318T5) 117
 H-322T5, U (Ch. V-2157-2, U) (See Model H-318T5) 117
 H-324T7, H-325T7, U (Ch. V-2162-2) 113-13
 H-326C7 (See Model H-316C7) 112
 H-327T6U (Ch. V-2157-3U) 126-14
 H-328C7, U (Ch. V-2136-4) 137-15
 H-331P4, U (Ch. V-2164, U) (Also see Prod. Chge. Bul. 52-Set 186-1) 171-12
 H-332P4 (See Model H-331P4, U) 171
 H-333P4, U (Ch. V-2164, U) (See Model H-331P4, U) (Also see Prod. Chge. Bul. 52-Set 186-1) 171
 H334T7U, H-335T7U (Ch. V-2136-5U) 142-16
 H-334T7UR (Ch. V-2136-5R) 149-14
 H-336T5U, H-337T5U (Ch. V-2157U) 134-12
 H-338T5U (Ch. V-2157-4U) 140-13
 H-341TSU (Ch. V-2157-4U) (See Model H-338T5U) 140
 H-342P5U, H-343P5U (Ch. V-2156-1U) 138-13
 H-344T5U, H-346T5 (Ch. V-2157-4U) (See Model H-338T5U) 140
 H-348P5, H-349P5 (Ch. V-2156-1U) (See Model H-342P5U, H-343P5U) 138
 H-350T7, H-351T7 (Ch. V-2180-1) (Also see Prod. Chge. Bul. 52-Set 186-1) 154-14
 H354C7 (Ch. V-2180-2) 158-13
 H-355T5, H-356T5 (Ch. V-2157-5) 161-11
 H-357C10 (Ch. V-2180-5) 161-12
 H-359T5, H-360T5 (Ch. V-2157-6) 191-21
 H-361T6 (Ch. V-2181-1) 186-15
 H-363T5, H-366T5 (Ch. V-2157-7) 185-15
 H-367T5 (Ch. V-2157-8) 189-17
 H-368P5, H-369P5 (Ch. V-2156-1U) (Also see Model H-342P5U) 138

WESTINGHOUSE—Cont.

H-202 (Ch. V-2128-2) 50-22
 H-203 (Ch. V-2137) 62-21
 H-204 (See Model H-202) 50
 H-207A (Ch. V-2130-1, V-2137) Tel. Rec. (See Model H-196) 65
 H207A (DX) (Ch. V-2130-1DX or V-2130-2DX and Radio Ch. V-2137) Tel. Rec. (See Model H196A (DX)) 84
 H207B (DX) (Ch. V-2130-2DX or V-2130-2DX and Radio Ch. V-2137) Tel. Rec. (See Model H196A (DX)) 84
 H-210, H-211 (Ch. V-2144, V-2144-1) 61-20
 H-212 (Ch. V-2137) (See Model H-203) 62
 H-214, H-214A (Ch. V-2149-3) 75-16
 H-216, H-216A (Ch. V-2146-05, V-2146-45, V-2149-1) 97A-14
 H-217, H-217A (Ch. V-2146-11DX, V-2137, V-2191) Tel. Rec. (Supp. to H-217B, Set 91) 99A-14
 H-217B (Ch. V-2146-35DX, V-2137, V-2149) Tel. Rec. 91-14
 H-220 (See Model H-190) 59
 H-223 (Ch. V-2150-01, V-2150-02) Tel. Rec. 78-14
 H-225 (DX) (Ch. V-2130-31DX or V-2130-32DX) Tel. Rec. (See Model H196A (DX)) 84
 H-224 (Ch. 2146-21DX, 2146-25DX, 2149) Tel. Rec. (See Model H-217B) 91
 H-231 (Ch. 2150-51 and V-2137-3 or V-2137-3S, V-2149-2) Tel. Rec. 99A-14
 H-242 (Ch. 2150-31) Tel. Rec. 97A-14
 H-251 (Ch. V-2150-81, -82, -84) Tel. Rec. 99A-14
 H300T5, H301T5 88-14
 H-302P5 (Ch. V-2151-1), H303P4, H304P4 (Ch. V-2153) 89-16
 H-307T7, H-308T7 (Ch. V-2146) 100-13
 H-309P5, H-309PSU (Ch. V-2156) 101-16
 H-310T5, H-310TSU, H-311T5, H-311TSU (Ch. V-2161, V-2161U) 99-18
 H-312P4, H-312PAU, H-313P4U, H-314P4, H-314PAU, H-315P4, H-315PAU (Ch. V-2153-1) 98-13
 H-316C7 (Ch. V-2136-1) 112-13
 H-317C7 (Ch. V-2136-1) (See Model H316C7) 112
 H-318T5, U (Ch. V-2157, U) 117-15
 H-320T5, U (Ch. V-2157, U) (See Model H-318T5) 117
 H-321T5, U (Ch. V-322T5, U) (See Model H-318T5) 117
 H-322T5, U (Ch. V-2157-2, U) (See Model H-318T5) 117
 H-324T7, H-325T7, U (Ch. V-2162-2) 113-13
 H-326C7 (See Model H-316C7) 112
 H-327T6U (Ch. V-2157-3U) 126-14
 H-328C7, U (Ch. V-2136-4) 137-15
 H-331P4, U (Ch. V-2164, U) (Also see Prod. Chge. Bul. 52-Set 186-1) 171-12
 H-332P4 (See Model H-331P4, U) 171
 H-333P4, U (Ch. V-2164, U) (See Model H-331P4, U) (Also see Prod. Chge. Bul. 52-Set 186-1) 171
 H334T7U, H-335T7U (Ch. V-2136-5U) 142-16
 H-334T7UR (Ch. V-2136-5R) 149-14
 H-336T5U, H-337T5U (Ch. V-2157U) 134-12
 H-338T5U (Ch. V-2157-4U) 140-13
 H-341TSU (Ch. V-2157-4U) (See Model H-338T5U) 140
 H-342P5U, H-343P5U (Ch. V-2156-1U) 138-13
 H-344T5U, H-346T5 (Ch. V-2157-4U) (See Model H-338T5U) 140
 H-348P5, H-349P5 (Ch. V-2156-1U) (See Model H-342P5U, H-343P5U) 138
 H-350T7, H-351T7 (Ch. V-2180-1) (Also see Prod. Chge. Bul. 52-Set 186-1) 154-14
 H354C7 (Ch. V-2180-2) 158-13
 H-355T5, H-356T5 (Ch. V-2157-5) 161-11
 H-357C10 (Ch. V-2180-5) 161-12
 H-359T5, H-360T5 (Ch. V-2157-6) 191-21
 H-361T6 (Ch. V-2181-1) 186-15
 H-363T5, H-366T5 (Ch. V-2157-7) 185-15
 H-367T5 (Ch. V-2157-8) 189-17
 H-368P5, H-369P5 (Ch. V-2156-1U) (Also see Model H-342P5U) 138

WESTINGHOUSE—Cont.

H-370T7, H-371T7 (Ch. V-2180-8) 186-16
 H-372T7, H-373T7, H-376T7 (Ch. V-2181-1) 187-17
 H-376T7A (Ch. V-2182-1) H-377 (Optional Pwr. Supply) 188-14
 H-374T5, H-375T5 (Ch. V-2157-9) 189
 (See Model H-367T5) 189
 H-600T16 (Ch. V-2150-61, A, B) Tel. Rec. 98-14
 H-601K12, H-602K12 (Ch. V-2150-41) Tel. Rec. (See Model H-600T16) 98
 H-603C12 (Ch. V-2152-01 & V-2149-3) Tel. Rec. 100-14
 H-604T10, H-604T10A (Ch. V-2150-91A, -94, -94A) Tel. Rec. (See Supp. to H-609T10, Set 95) 99A-14
 H-605T12 (Ch. V-2150-101) Tel. Rec. 97-19
 H-606K12 (Ch. V-2150-111, A) Tel. Rec. 120-12
 H-607K12 (Ch. V-2150-111, A) Tel. Rec. (See Model H-606K12) 120
 H-608C12 (Ch. V-2152-01, V-2149-3) Tel. Rec. (See Model H-603C12) 100
 H-609T10 (Ch. V-2150-94C) Tel. Rec. 95-7
 H-610T12 (Ch. V-2150-136) Tel. Rec. 105-13
 H-611C12 (Ch. V-2152-16) Tel. Rec. 112-14
 H-613K16 (Ch. V-2150-146) Tel. Rec. 107-12
 H-614T12 (Ch. V-2150-136) Tel. Rec. (See Model H610T12) 105
 H-615C12 (Ch. V-2152-16) Tel. Rec. (See Model H-611C12) 112
 H-617T12 (Ch. V-2150-174, U, -177U) Tel. Rec. (Also See Prod. Chge. Bul. 10-Set 116-1) 103-17
 H-618T16 (Ch. V-2150-186, A, C, CA) Tel. Rec. (See Model H-617T12) (Also See Prod. Chge. Bul. 10-Set 116-1) 103
 H-619T12, U (Ch. V-2150-176, U, -177U) Tel. Rec. (See Model H-617T12) 103
 H-620K16 (Ch. V-2150-186, A, C, CA) Tel. Rec. (See Model H-617T12) (Also See Prod. Chge. Bul. 10-Set 116-1) 103
 H-622K16 (Ch. V-2150-186, A, C, CA) Tel. Rec. (See Model H-617T12) (Also See Prod. Chge. Bul. 10-Set 116-1) 103
 H-625T12 (Ch. V-2150-197) Tel. Rec. 114-11
 H-626T16 (Ch. V-2172) Tel. Rec. 116-13
 H-627K16 (Ch. V-2171) Tel. Rec. (See Model H-626T16) 116
 H-628K16, H-629K-16 (Ch. V-2171) Tel. Rec. (See Model H-626T16) 116
 H-630T14 (Ch. V-2176) Tel. Rec. (See Model H-626T16) 116
 H-633C17, H-634C17 (Ch. V-2173) Tel. Rec. 122-11
 H-636T17 (Ch. V-2175) Tel. Rec. (See Model H-626T16) 116
 H-637T14 (Ch. V-2177) Tel. Rec. (See Model H-626T16) 116
 H-638K20 (Ch. V-2178) Tel. Rec. 129-13
 H-639T7 (Ch. V-2192, -1) 133-15
 H-640T17 (Ch. V-2175-3, -4), H-640T17A (Ch. V-2192, -1, -2, -3, -4, -5, -6) Tel. Rec. (See Model H-639T7) (Also See Prod. Chge. Bul. 28-Set 150-1) 133
 H-641K17 (Ch. V-2175-1, -5), H-641K17A (Ch. V-2192, -1, -2, -3, -4, -5, -6) Tel. Rec. (See Model H-639T7) (Also See Prod. Chge. Bul. 28-Set 150-1) 133
 H-642K20 (Ch. V-2178-1, -3) Tel. Rec. (See Model H-638K20) 129
 H-642K20A (Ch. V-2194, V-2194A, V-2194-1) 137-16
 H-643K16 (Ch. V-2179, V-2179-1) Tel. Rec. 127-13
 H-646K17 (Ch. V-2192) Tel. Rec. (See Model H-639T7) 133
 H-647K17 (Ch. V-2175-3) Tel. Rec. (See Model H-639T7) 133
 H-648T20 (Ch. V-2201-1) Tel. Rec. (Also See Prod. Chge. Bul. 42-Set 176-1) 154-15
 H-649T17 (Ch. V-2200-1) Tel. Rec. (See Model H-648T20) (Also See Prod. Chge. Bul. 42-Set 176-1) 154
 H-649T17 (Ch. V-2192-4) Tel. Rec. (See Model H639T17) 133

WESTINGHOUSE—Cont.

H-650K17 (Ch. 2192-4) Tel. Rec. (See Model H-639T17) 133
 H-650T17 (Ch. V-2200-1) Tel. Rec. (See Model H-648T20) (Also See Prod. Chge. Bul. 40-Set 172-1, Prod. Chge. Bul. 45-Set 179-1 and Prod. Chge. Bul. 52-Set 186-1) 167
 H-651K17 (Ch. V-2192) Tel. Rec. (See Model H639T17) 133
 H-651K17 (Ch. V-2200-1) Tel. Rec. (See Model H-648T20) (Also See Prod. Chge. Bul. 42-Set 176-1) 154
 H-652K20 (Ch. V-2194-2, -3) Tel. Rec. (See Model H638K20) (Also See Prod. Chge. Bul. 31, Set 156-3) 154
 H-652K20 (Ch. V-2201-1) Tel. Rec. (See Model H-648T20) (Also See Prod. Chge. Bul. 42-Set 176-1) 154
 H-653K24 (Ch. V-2202-2, V-2210-1) Tel. Rec. (Also See Prod. Chge. Bul. 35, Set 164-1) 160-13
 H-654T17 (Ch. V-2175-3, -4, V-2192, -1) Tel. Rec. (See Model H-639T17) 133
 H-655K17, H-656K17, H-657K17 (Ch. V-2200-1) Tel. Rec. (See Model H-648T20) (Also See Prod. Chge. Bul. 42-Set 176-1) 154
 H-657K17 (Ch. V-2192, 4-5, -6) Tel. Rec. (See Model H-639T17) (Also See Prod. Chge. Bul. 28-Set 150-1) 133
 H-658T17 (Ch. V-2192, -1) Tel. Rec. (See Model H-639T17) (Also See Prod. Chge. Bul. 28-Set 150-1) 133
 H-659T17 (Ch. V-2204-1) Tel. Rec. (See Model H-648T20) (Also See Prod. Chge. Bul. 42-Set 176-1) 154
 H-660C17, H-661C17 (Ch. V-2203-1 and Radio Ch. V-2180-3) Tel. Rec. (Also See Prod. Chge. Bul. 46-Set 180-1) 157-12
 H-662K20 (Ch. V-2201-1) Tel. Rec. (See Model H-648T20) (Also See Prod. Chge. Bul. 42-Set 176-1) 154
 H-663T17 (Ch. V-2192, -2) Tel. Rec. (See Model H-639T17) (Also See Prod. Chge. Bul. 28-Set 150-1) 133
 H-663T17 (Ch. V-2204) Tel. Rec. (See Model H-648T20) (Also See Prod. Chge. Bul. 42-Set 176-1) 154
 H-664K17 (Ch. V-2200-1) Tel. Rec. (See Model H-648T20) (Also See Prod. Chge. Bul. 42-Set 176-1) 154
 H-665T16 (Ch. V-2206-1) Tel. Rec. (See Model Prod. Chge. Bul. 42-Set 176-1) 154
 H-667T17, H-668T17 (Ch. V-2216) Tel. Rec. (Also See Prod. Chge. Bul. 40-Set 172-1) 167-15
 H-673K21 (Ch. V-2217-1) Tel. Rec. (See Model H-667T17) 167
 H-676T21 (Ch. V-2217-1) Tel. Rec. (See Model H-667T17) 167
 H-678K17, H-679K17 (Ch. V-2216-1, -2, -3) Tel. Rec. (See Model H-667T17) (Also See Prod. Chge. Bul. 40-Set 172-1, Prod. Chge. Bul. 45-Set 179-1 and Prod. Chge. Bul. 52-Set 186-1) 167
 H-681T17 (Ch. V-2215-1) Tel. Rec. (See Model H-667T17) (Also See Prod. Chge. Bul. 45-Set 179-1 and Prod. Chge. Bul. 52-Set 186-1) 167
 H-688K24 (Ch. V-2219-1) (Also see Prod. Chge. Bul. 52-Set 186-1) 174-14
 H-689T16 (Ch. V-2214-1) Tel. Rec. (See Model H-667T17) 167
 H-692T21 (Ch. V-2217-2, -3) Tel. Rec. (See Model H-667T17) (Also See Prod. Chge. Bul. 43-Set 177-1 and Prod. Chge. Bul. 52-Set 186-1) 167
 H-695K21 (Ch. V-2217-2, -3) Tel. Rec. (See Model H-667T17) (Also See Prod. Chge. Bul. 43-Set 177-1 and Prod. Chge. Bul. 52-Set 186-1) 167

WESTINGHOUSE—Cont.

H-699K17 (Ch. V-2216-2, -3) Tel. Rec. (See Model H-667T17) (Also See Prod. Chge. Bul. 40-Set 172-1, Prod. Chge. Bul. 45-Set 179-1 and Prod. Chge. Bul. 52-Set 186-1) 167
 H700T17, H-701T17 (Ch. V-2216-2, -3) Tel. Rec. (See Model H-667T17) (Also See Prod. Chge. Bul. 40-Set 172-1, Prod. Chge. Bul. 45-Set 179-1 and Prod. Chge. Bul. 52-Set 186-1) 167
 H701K21 (Ch. V-2217-2) Tel. Rec. (See Model H-667T17) (Also See Prod. Chge. Bul. 43-Set 177-1 and Prod. Chge. Bul. 52-Set 186-1) 167
 H702K21 (Ch. V-2217-2) Tel. Rec. (See Model H-667T17) (Also See Prod. Chge. Bul. 43-Set 177-1 and Prod. Chge. Bul. 52-Set 186-1) 167
 H703K17 (Ch. V-2216-2, -3) Tel. Rec. (See Model H-667T17) (Also See Prod. Chge. Bul. 40-Set 172-1, Prod. Chge. Bul. 45-Set 179-1 and Prod. Chge. Bul. 52-Set 186-1) 167
 H704T17 (Ch. V-2216-2) Tel. Rec. (See Model H-667T17) (Also See Prod. Chge. Bul. 40-Set 172-1, Prod. Chge. Bul. 45-Set 179-1 and Prod. Chge. Bul. 52-Set 186-1) 167
 H705K17 (Ch. V-2216-2, -3) Tel. Rec. (See Model H-667T17) (Also See Prod. Chge. Bul. 40-Set 172-1, Prod. Chge. Bul. 45-Set 179-1 and Prod. Chge. Bul. 52-Set 186-1) 167
 H706T16 (Ch. V-2207-1) Tel. Rec. 193-12
 H708T20 (Ch. V-2220-1, -3, -11) Tel. Rec. (See Model H-706T16) 193
 H710T21, H-711T21 (Ch. V-2217-2, -3) (See Model H-667T17) 193
 H-713K21, H-714K21, H-715K21 (Ch. V-2217-2, -3) Tel. Rec. (See Model H-667T17) 193
 H-716T17 (Ch. V-2208-1) Tel. Rec. (See Model H-667T17) 193
 H-717K21, H-718K21 (Ch. V-2217-2, -3) Tel. Rec. (See Model H-667T17) 193
 H-719K21, H-720K21 (Ch. V-2217-2, -3) Tel. Rec. (See Model H-667T17) 193
 H-721K21, H-722K21 (Ch. V-2217-2, -3) Tel. Rec. (See Model H-667T17) 193
 H-723K21, H-724K21 (Ch. V-2217-2, -3) Tel. Rec. (See Model

WESTINGHOUSE-ZENITH

WESTINGHOUSE-Cont.

Ch. V-2118 (See Model H-161) ... 34
 Ch. V-2119-1 (See Model H-164) ... 36
 Ch. V-2120 (See Model H-165) ... 32
 Ch. V-2122 (See Model H-157) ... 33
 Ch. V-2123 (See Model H-178) ... 35
 Ch. V-2124-1 (See Model H-169) ... 37
 Ch. V-2127 (See Model H-183) ... 48
 Ch. V-2128, V-2128-1 (See Model H-182) ... 53
 Ch. V-2128-2 (See Model H-202) ... 50
 Ch. V-2130-1 (See Model H-196) ... 65
 Ch. V-2130-1DX, V-2130-1DX (See Model H196A [DX]) ... 84
 Ch. V-2130-2DX, V-2130-2DX (See Model H196A [DX]) ... 84
 Ch. V-2130-3DX, V-2130-3DX (See Model H196A [DX]) ... 84
 Ch. V-2131, V-2131-1 (See Model H-185) ... 54
 Ch. V-2132 (See Model H-186M) ... 60
 Ch. V-2133 (See Model H-188) ... 51
 Ch. V-2134 (See Model H-190) ... 59
 Ch. V-2136 (See Model H-3077) ... 100
 Ch. V-2136-1 (See Model H-316C7) ... 112
 Ch. V-2136-2 (See Model H-3247) ... 113
 Ch. V-2136-4 (See Model H-328C7) ... 137
 Ch. V-2136-5R (See Model H-3347UR) ... 149
 Ch. V-2136-5U (See Model H-3347U) ... 142
 Ch. V-2137 (See Model H-203) ... 62
 Ch. V-2137-1 (See Model H-199) ... 69
 Ch. V-2137-2 (See Model H-198) ... 73
 Ch. V-2137-3, V-2137-35 (See Model H-231) ... 97A
 Ch. V-2144, V-2144-1 (See Model H-210) ... 61
 Ch. V-2146-05 (See Model H-216) ... 97A
 Ch. V-2146-1DX (See Model H-217) ... 99A
 Ch. V-2146-2DX, V-2146-2DX (See Model H-217B) ... 91
 Ch. V-2146-3DX (See Model H-217B) ... 91
 Ch. V-2146-45 (See Model H-216) ... 97A
 Ch. V-2148 (See Model H3005) ... 88
 Ch. V-2149 (See Model H-217B) ... 91
 Ch. V-2149-1 (See Model H-216) ... 97A
 Ch. V-2149-3 (See Model H-603C12) ... 10C
 Ch. V-2150-01, V-2150-02 (See Model H-223) ... 78
 Ch. V-2150-31 (See Model H-242) ... 97A
 Ch. V-2150-41 (See Model H-600T16) ... 98
 Ch. V-2150-51 (See Model H-231) ... 99A
 Ch. V-2150-61, A, B (See Model H-600T16) ... 98
 Ch. V-2150-81, -82, -84 (See Model H251) ... 99A
 Ch. V-2150-91A (See Model H-604T10) ... 99A
 Ch. V-2150-94 (See Model H-604T10, A) ... 99A
 Ch. V-2150-94C (See Model H-609T10) ... 95
 Ch. V-2150-101 (See Model H-605T12) ... 97
 Ch. V-2150-11, A (See Model H-606K12) ... 120
 Ch. V-2150-136 (See Model H-610T12) ... 105
 Ch. V-2150-146 (See Model H-613K16) ... 107
 Ch. V-2150-176, U (See Model H-617T12) ... 103
 Ch. V-2150-177U (See Model H-617T12) ... 103
 Ch. V-2150-186, A, C, CA (See Model H-617T12) ... 103
 Ch. V-2150-197 (See Model H-625T12) ... 114
 Ch. V-2151-1 (See Model H-302P5) ... 91
 Ch. V-2152-01 (See Model H603C12) ... 100
 Ch. V-2152-16 (See Model H-611C12) ... 112
 Ch. V-2153 (See Model H303P4) ... 89
 Ch. V-2153-1 (See Model H-312P4) ... 98
 Ch. V-2156 (See Model H-309P5) ... 101
 Ch. V-2156-1U (See Model H-342P5U) ... 138
 Ch. V-2157, U, -1, -1U, -2, -2U (See Model H-318P5) ... 117
 Ch. V-2157-3U (See Model H-327T6U) ... 126
 Ch. V-2157-4U (See Model H-338T5U) ... 140
 Ch. V-2157-5 (See Model H-355T5) ... 161

WESTINGHOUSE-Cont.

Ch. V-2157-6 (See Model H-359T5) ... 191
 Ch. V-2157-8 (See Model H-367T5) ... 189
 Ch. V-2157-9 (See Model H-374T5) ... 189
 Ch. V-2161, V-2161U (See Model H-310T5) ... 99
 Ch. V-2164, U (See Model H-331P4) ... 171
 Ch. V-2171 (See Model H-626T16) ... 116
 Ch. V-2173 (See Model H-633C17) ... 122
 Ch. V-2175-1, -3, -4, -5 (See Model H-639T17) ... 133
 Ch. V-2175, V-2176, H-2177 (See Model H-626T16) ... 116
 Ch. V-2178, -1, -3 (See Model H-638K20) ... 129
 Ch. V-2180-1 (See Model H350T7) ... 154
 Ch. V-2180-2 (See Model H-354C7) ... 158
 Ch. V-2180-3 (See Model H-660C17) ... 157
 Ch. V-2180-5 (See Model H-357C10) ... 161
 Ch. V-2180-8 (See Model H-370T7) ... 186
 Ch. V-2180-9, -10 (See Model H-730C21) ... 190
 Ch. V-2181-1 (See Model H-361T6) ... 186
 Ch. V-2192-1 (See Model H-639T17) ... 133
 Ch. V-2192-2 (See Model H-657K17) ... 133
 Ch. V-2194-1 (See Model H-642K20A) ... 137
 Ch. V-2194-2, -3 (See Model H-638K20) ... 129
 Ch. V-2200-1 (See Model H-651K17) ... 154
 Ch. V-2201-1 (See Model H-652K20) ... 129
 Ch. V-2202-2 (See Model H-653K24) ... 160
 Ch. V-2203-1 (See Model H-660C17) ... 157
 Ch. V-2204 (See Model H-659T17) ... 154
 Ch. V-2206-1 (See Model H-665T16) ... 154
 Ch. V-2207-1 (See Model H-706T16) ... 193
 Ch. V-2208-1 (See Model H-716T7) ... 167
 Ch. V-2210-1 (See Model H-653K24) ... 160
 Ch. V-2214-1 (See Model H-689T16) ... 167
 Ch. V-2215-1 (See Model H-681T7) ... 167
 Ch. V-2216-1 (See Model H-667T17) ... 167
 Ch. V-2216-2, -3 (See Model H-678K17) ... 167
 Ch. V-2216-4 (See Model H-704T17) ... 167
 Ch. V-2217-1 (See Model H-673K21) ... 167
 Ch. V-2217-2, -3 (See Model H-692T21) ... 167
 Ch. V-2217-4 (See Model H-704T17) ... 167
 Ch. V-2217-5 (See Model H-710T21) ... 167
 Ch. V-2218-1, -11 (See Model H-730C21) ... 190
 Ch. V-2218-2 (See Model 730C21) ... 190
 Ch. V-2219-1 (See Model H-688K24) ... 174
 Ch. V-2220-1, -2, -11 (See Model H-706T16) ... 193
 Ch. V-2221-1 (See Model H-750T21) ... 193

WILCOX-GAY
 (Also See Majestic)
 (Also See Recordio)
 G-300, G-402, G-403, G-404 Tel. Rec. (See Majestic Model 1272) ... 108
 G-414 Tel. Rec. (See Majestic Model [G-414]) ... 133
 G-426, G-427 Tel. Rec. (See Majestic Model 1272) ... 108
 G-614, G-624 Tel. Rec. (See Majestic Model G-414) ... 133
 G-914 Tel. Rec. (See Majestic Model G-414) ... 133
 OD-446M (OD Series) ... 101-17
 OF439-1-C (Ch. OF Series) ... 98-15
 OD Series (See Model OD-446M) ... 101
 OL Series Tel. Rec. ... 101
 9D Series Tel. Rec. ... 101
 9W Series Tel. Rec. ... 101

WILLYS-OVERLAND
 8030 (670777) ... 50-23
 670777 (See Model 8030) ... 50
 677012 ... 156-14
 679517 ... 172-12

WILMAK
 W-446 "DENchum" ... 21-11

WIRE RECORDING CORP.
 (See Recorder Listing)

WOOLAROC
 3-1A (Ch. 6-902Z-J) ... 6-37
 3-2A (Ch. 6-902Z-K) ... 6-37
 3-3A (Code 7-9003-D) ... 6-38
 3-5A ... 22-32
 3-6A/5 ... 24-32

WOOLAROC-Cont.

3-9A, 3-10A ... 7-30
 3-11A (Ch. 56A76) ... 8-33
 3-12A/3 ... 23-33
 3-13A, 3-14A, 3-15A, 3-16A ... 34-28
 3-17A, 3-18A ... 34-22
 3-20A ... 24-33
 3-29A ... 7-31
 3-61A (See Model 3-71A) ... 36
 3-70A ... 31-34
 3-71A ... 36-29

ZENITH (Also see Record Changer Listing)

G500 (Ch. 5G40) ... 83-16
 G503 (Ch. 5G41) ... 99-19
 G510, G510Y (Ch. 5G02) ... 84-14
 G511, G511W, G511Y (Ch. 5G01) ... 85-14
 G516 (Ch. 5G03) ... 109-15
 G615, G615W, G615Y (Ch. 5G05) ... 86-14
 G660, G663, G665 (Ch. 6G01) ... 96-12
 G723 (Ch. 7G04) ... 104-13
 G724 (Ch. 7G02) ... 103-18
 G725 (Ch. 7G01) ... 101-18
 G881, G882, G883, G884, G885 (Ch. 8G01) ... 98-16
 G-2322 (Ch. 23G22) ... 98-17
 G2322 (Ch. 23G24) ... 91A-13
 G-2322Z1 (Ch. 23G24Z1) ... 91A-13
 G2327Z (Ch. 23G24) ... 91A
 G-2340, R (Ch. 23G22) ... 98
 G2340RZ (Ch. 23G24) ... 91A
 G2340Z1, R21 (Ch. 23G24Z1) ... 91A
 G2346R (Ch. 23G22) ... 98
 G2322Z (Ch. 23G24) ... 98
 G2350RZ, Z (Ch. 23G24) ... 91A
 G2353E (Ch. 23G24) ... 91A
 G2353E21 (Ch. 23G24Z1) ... 91A
 G2356EZ (Ch. 23G24) ... 91A
 G2420E (Ch. 24G20) ... 93-11
 G2420-EOX (Ch. 24G20-EOX) Tel. Rec. (See Model G2420E) ... 93
 G2420R (Ch. 24G20) ... 93
 G2420E (Ch. 24G20E) ... 93
 G2420-ROX (Ch. 24G20-ROX) Tel. Rec. (See Model G2420E) ... 93
 G2437RZ, G2438RZ, G2439RZ (Ch. 24G26) ... 91A-12
 G2441 (Ch. 24G22/24) ... 98
 G2441R (Ch. 24G22/24) ... 98
 G2441Z1, R21 (Ch. 24G26Z1) Tel. Rec. (See Model G2442R) ... 98
 G2442R (Ch. 24G26) ... 98
 G2442E21, R21 (Ch. 24G26Z1) Tel. Rec. (See Model G2442R) ... 98
 G2448RZ (Ch. 24G26Z1) ... 98
 G2448RZ (Ch. 24G26) ... 98
 G2448RZ1 (Ch. 24G26Z1) ... 91A
 G2454R (Ch. 24G21) ... 93
 G-2454-ROX (Ch. 24G21-ROX) Tel. Rec. (See Model G2420E) ... 93
 G2951, R, OX, ROX, G2952, R, ROX (Ch. 29G20, OX) Tel. Rec. (See Model G2951R) ... 95-8
 G2957R, Z (Ch. 23G23 & Radio Ch. 6G20) Tel. Rec. (See Model G2322) ... 98
 G2958R (Ch. 23G23 & Radio Ch. 6G20) Tel. Rec. (See Model G2322) ... 98
 G3062 (Ch. 24G23/25 & Radio Ch. 6G20) Tel. Rec. (See Model G2322) ... 98
 G3157RZ, Z (Ch. 23G24, 8G20/22) Tel. Rec. (See Model G3157Z1, R21 (Ch. 23G24Z1) Tel. Rec. (See Model G3158RZ) ... 91A
 G3158RZ (Ch. 23G24) ... 91A
 G3158RZ1 (Ch. 23G24Z1) ... 91A
 G3173RZ, Z (Ch. 23G24, 8G20/22) Tel. Rec. (See Model G3173RZ1, R21 (Ch. 23G24Z1) Tel. Rec. (See Model G3173RZ) ... 91A
 G3174RZ (Ch. 23G24, 8G20/22) Tel. Rec. (See Model G3174RZ) ... 91A
 G3174RZ1 (Ch. 23G24Z1) ... 91A
 H-401, G (Ch. 4H40) ... 156-15
 H500 (Ch. 5H40) ... 152-12
 H-503, Y (Ch. 5H41) ... 151-12
 H511, H511W, H511Y (Ch. 5H01) ... 147-13
 H615 (Ch. 6G05) ... 140-14
 H615Z1 (Ch. 6G05Z1) ... 178-16
 H661E, H661R (Ch. 6H01) ... 125-13
 H644 (Ch. 6H02) ... 149-15
 H645, R, RZ, Z (Ch. 6H01) (See Model H661E) ... 125
 H723 (Ch. 7H04) ... 122-12
 H723Z (Ch. 7H04Z) ... 134-14
 H723Z1 (Ch. 7H04Z1) ... 163
 H725 (Ch. 7G01) ... 178-17
 H724 (Ch. 7H02) ... 126-15
 H724Z (Ch. 7H02Z) ... 134
 H-724Z1 (Ch. 7H02Z1) ... 163-14
 H724Z2 (Ch. 7H02Z2) ... 178-17
 H725 (Ch. 7G01) ... 135-15
 H880, H880R (Ch. 8H20) Revised) ... 127-14
 H880RZ (Ch. 8H20) ... 114-12
 H-1083E (Ch. 10H20) (See Model H437E) ... 120
 H1083R, H1083RZ (Ch. 10H20) (See Model H437E) ... 120
 H2029R, H2030E, H2030R (Ch. 20H20) Tel. Rec. (See Model H2029R) ... 144
 H2052R, H2053E (Ch. 20H20) Tel. Rec. (See Model H2029R) ... 144
 H2226E, R, H2227E, H2227R (Ch. 22H20) Tel. Rec. (See Model H2226E, R) ... 114-13
 H2229R, H2230E, R (Ch. 22H21) Tel. Rec. (See Model H2229R) ... 151-13
 H2241R (Ch. 22H21) Tel. Rec. (See Model H2229R) ... 151
 H2242E, R (Ch. 22H22) Tel. Rec. (See Model H2242E, R) ... 151
 H2250R (Ch. 22H20) Tel. Rec. (See Model H2226R) ... 114
 H2252R, H2253E (Ch. 22H21) Tel. Rec. (See Model H2229R) ... 151
 H2254R (Ch. 22H22) Tel. Rec. (See Model H2229R) ... 151
 H2255E (Ch. 22H20) Tel. Rec. (See Model H2226R) ... 114
 H2328E, EZ, R, RZ (Ch. 23H22, Z) Tel. Rec. (See Model H2328E, Z) ... 118-11
 H2329R, RZ (Ch. 23H22, Z) Tel. Rec. (See Model H2328E, Z) ... 118
 H2330E, R (Ch. 23H22) Tel. Rec. (See Model H2328E) ... 118
 H2341R (Ch. 23H22) Tel. Rec. (See Model H2328E) ... 118
 H2352R, RZ, H2353E, EZ (Ch. 23H22, Z) Tel. Rec. (See Model H2328E, Z) ... 118
 H2436Q (Ch. 24H21) Tel. Rec. (See Model H437E) ... 120
 H2437E, R, H2438R, H2439R (Ch. 24H20) Tel. Rec. (See Model H2437E) ... 120-13
 H2443R (Ch. 24H20) Tel. Rec. (See Model H2437E) ... 120
 H2445R (Ch. 24H21) Tel. Rec. (See Model H2437E) ... 120
 H2447R (Ch. 24H21) Tel. Rec. (See Model H2437E) ... 120
 H2449E (Ch. 24H20) Tel. Rec. (See Model H2437E) ... 120
 H2868 (Ch. 20H20, Radio Ch. 8H20E) Tel. Rec. (See Model H3068R) ... 151
 H3074 (Ch. 20H20) Tel. Rec. (See Model H2029R, Set 151-13) ... 120
 H3168R (Ch. 23H22 and Radio Ch. 8H20) Tel. Rec. (See Model H2328E Set 118 and Model H880RZ Set 114) ... 120
 H3267, R (Ch. 24H20 and Radio Ch. 8H20) Tel. Rec. (See Model H2437E [Set 120] and Model H880RZ [Set 114]) ... 120
 H3273E, H3274E (Radio Ch. 22H21 and Radio Ch. 10H20Z) Tel. Rec. (See Model H2229R) ... 151

ZENITH-Cont.

G3259RZ (Ch. 24G26, 8G20/22) Tel. Rec. ... 91A-12, 13
 G3259RZ1 (Ch. 24G26Z1) Tel. Rec. ... 91A
 G3262Z (Ch. 24G26, 8G20/22) Tel. Rec. (See Model G3259RZ) ... 91A
 G3262Z1 (Ch. 24G26Z1) Tel. Rec. ... 91A
 G3275RZ (Ch. 24G26, 8G20/22) Tel. Rec. (See Model G3259RZ) ... 91A
 G3276Z (Ch. 24G26, 8G20/22) Tel. Rec. (See Model G3259RZ) ... 91A
 H-401, G (Ch. 4H40) ... 156-15
 H500 (Ch. 5H40) ... 152-12
 H-503, Y (Ch. 5H41) ... 151-12
 H511, H511W, H511Y (Ch. 5H01) ... 147-13
 H615 (Ch. 6G05) ... 140-14
 H615Z1 (Ch. 6G05Z1) ... 178-16
 H661E, H661R (Ch. 6H01) ... 125-13
 H644 (Ch. 6H02) ... 149-15
 H645, R, RZ, Z (Ch. 6H01) (See Model H661E) ... 125
 H723 (Ch. 7H04) ... 122-12
 H723Z (Ch. 7H04Z) ... 134-14
 H723Z1 (Ch. 7H04Z1) ... 163
 H725 (Ch. 7G01) ... 178-17
 H724 (Ch. 7H02) ... 126-15
 H724Z (Ch. 7H02Z) ... 134
 H-724Z1 (Ch. 7H02Z1) ... 163-14
 H724Z2 (Ch. 7H02Z2) ... 178-17
 H725 (Ch. 7G01) ... 135-15
 H880, H880R (Ch. 8H20) Revised) ... 127-14
 H880RZ (Ch. 8H20) ... 114-12
 H-1083E (Ch. 10H20) (See Model H437E) ... 120
 H1083R, H1083RZ (Ch. 10H20) (See Model H437E) ... 120
 H2029R, H2030E, H2030R (Ch. 20H20) Tel. Rec. (See Model H2029R) ... 144
 H2052R, H2053E (Ch. 20H20) Tel. Rec. (See Model H2029R) ... 144
 H2226E, R, H2227E, H2227R (Ch. 22H20) Tel. Rec. (See Model H2226E, R) ... 114-13
 H2229R, H2230E, R (Ch. 22H21) Tel. Rec. (See Model H2229R) ... 151-13
 H2241R (Ch. 22H21) Tel. Rec. (See Model H2229R) ... 151
 H2242E, R (Ch. 22H22) Tel. Rec. (See Model H2242E, R) ... 151
 H2250R (Ch. 22H20) Tel. Rec. (See Model H2226R) ... 114
 H2252R, H2253E (Ch. 22H21) Tel. Rec. (See Model H2229R) ... 151
 H2254R (Ch. 22H22) Tel. Rec. (See Model H2229R) ... 151
 H2255E (Ch. 22H20) Tel. Rec. (See Model H2226R) ... 114
 H2328E, EZ, R, RZ (Ch. 23H22, Z) Tel. Rec. (See Model H2328E, Z) ... 118-11
 H2329R, RZ (Ch. 23H22, Z) Tel. Rec. (See Model H2328E, Z) ... 118
 H2330E, R (Ch. 23H22) Tel. Rec. (See Model H2328E) ... 118
 H2341R (Ch. 23H22) Tel. Rec. (See Model H2328E) ... 118
 H2352R, RZ, H2353E, EZ (Ch. 23H22, Z) Tel. Rec. (See Model H2328E, Z) ... 118
 H2436Q (Ch. 24H21) Tel. Rec. (See Model H437E) ... 120
 H2437E, R, H2438R, H2439R (Ch. 24H20) Tel. Rec. (See Model H2437E) ... 120-13
 H2443R (Ch. 24H20) Tel. Rec. (See Model H2437E) ... 120
 H2445R (Ch. 24H21) Tel. Rec. (See Model H2437E) ... 120
 H2447R (Ch. 24H21) Tel. Rec. (See Model H2437E) ... 120
 H2449E (Ch. 24H20) Tel. Rec. (See Model H2437E) ... 120
 H2868 (Ch. 20H20, Radio Ch. 8H20E) Tel. Rec. (See Model H3068R) ... 151
 H3074 (Ch. 20H20) Tel. Rec. (See Model H2029R, Set 151-13) ... 120
 H3168R (Ch. 23H22 and Radio Ch. 8H20) Tel. Rec. (See Model H2328E Set 118 and Model H880RZ Set 114) ... 120
 H3267, R (Ch. 24H20 and Radio Ch. 8H20) Tel. Rec. (See Model H2437E [Set 120] and Model H880RZ [Set 114]) ... 120
 H3273E, H3274E (Radio Ch. 22H21 and Radio Ch. 10H20Z) Tel. Rec. (See Model H2229R) ... 151

ZENITH-Cont.

H3284R (Ch. 22H22 and Radio Ch. 10H20Z) Tel. Rec. (See Model H2229R) ... 151
 H3467R (Ch. 24H20 and Radio Ch. 20H20) Tel. Rec. (See Model H437E) ... 120
 H3469E (Ch. 24H20) Tel. Rec. (See Model H437E) ... 120
 H3477R (Ch. 24H21 and Radio Ch. 10H20) Tel. Rec. (See Model H437E) ... 120
 H3478R (Ch. 24H20 and Radio Ch. 10H20) Tel. Rec. (See Model H437E) ... 120
 H3478R (Ch. 24H21 and Radio Ch. 10H20) Tel. Rec. (See Model H437E) ... 120
 H3478E (Ch. 24H21 and Radio Ch. 10H20) Tel. Rec. (See Model H437E) ... 120
 H3490EQ (Ch. 24H21) Tel. Rec. (See Model H437E) ... 120
 H3490EQ (Ch. 24H21) Tel. Rec. (See Model H437E) ... 120
 H402 (Ch. 4J40) ... 178-18
 J420T (Ch. 4J60T) ... 185-16
 J514 (Ch. 5J03) ... 176-14
 J615, F, G, W, Y (Ch. 6J05) ... 182-16
 J616 (Ch. 6J03) ... 179-14
 J644, J665E, R (Ch. 6J02) ... 172-13
 J737G, Y (Ch. 7J03) ... 186-17
 J880, J880R (Ch. 8H20Z) ... 168-14
 J1083E, J1083EZ (Ch. 10H20Z) (See Model H2229R) ... 151
 J1086, J1086R, J1086RZ (Ch. 10H20Z) (See Model H2229R) ... 151
 J1087, J1087Z (Ch. 10H20Z) (See Model H2229R) ... 151
 J2026R (Ch. 20J21) Tel. Rec. (See Model J2026R) ... 159-18
 J2027, R, J2029E, R, J2030E, R (Ch. 20J21) Tel. Rec. (See Model J2026R) ... 159
 J2031R (Ch. 20J21) Tel. Rec. (See Model J2026R) ... 159
 J2032R (Ch. 20J22) Tel. Rec. (See Model J2026R) ... 159
 J2040E, J2042R, J2043R, J2044E, R (Ch. 20J21) Tel. Rec. (See Model J2026R) ... 159
 J2049R (Ch. 20J21) Tel. Rec. (See Model J2026R) ... 159
 J2050R (Ch. 20J21) Tel. Rec. (See Model J2026R) ... 159
 J2051E, J2053R, J2054R, J2055R (Ch. 20J22) Tel. Rec. (See Model J2026R) ... 159
 J2126R (Ch. 21J21) Tel. Rec. (See Model J2026R) ... 159
 J2127E, R, J2129E, R, J2130E, R (Ch. 21J20) Tel. Rec. (See Model J2026R) ... 159
 J2140E, J2142R, J2143R, J2144E, R (Ch. 21J20) Tel. Rec. (See Model J2026R) ... 159
 J2151E, J2153R, J2154R, J2155R (Ch. 21J21) Tel. Rec. (See Model J2026R) ... 159
 J2868R (Ch. 20J21 & Radio Ch. 8H20Z) Tel. Rec. (See Model J2026R) ... 159
 J2968R (Ch. 21J20 & Radio Ch. 8H20Z) Tel. Rec. (See Model J2026R) ... 159
 J3069E (Ch. 20J21 & Radio Ch. 10H20Z) Tel. Rec. (See Model J2026R) ... 159
 J3169E (Ch. 21J20 & Radio Ch. 10H20Z) Tel. Rec. (See Model J2026R) ... 159
 K412C, R, W, Y (Ch. 4K01) ... 195-13
 K510, K510W, K510Y, (Ch. 5K02) ... 181-15
 K515 (Ch. 5K03) (See Model J514) ... 176
 K518 (Ch. 5J03) (See Model J514) ... 176
 K777E, R (Ch. 7K20) ... 190-17
 K1812E, R (Ch. 19K22) Tel. Rec. (See Model K1812E) ... 184-15
 K1815E, R (Ch. 19K20) Tel. Rec. (See Model K1812E) ... 184
 K1820E, R (Ch. 19K20) Tel. Rec. (See Model K1812E) ... 184
 K1846E, R (Ch. 19K20) Tel. Rec. (See Model K1812E) ... 184
 K1850E, R (Ch. 19K20) Tel. Rec. (See Model K1812E) ... 184
 K1880R (Ch. 19K20) Tel. Rec. (See Model K1812E) ... 184
 K2229R (Ch. 19K23) Tel. Rec. (See Model K1812E) ... 184
 K2230E, R (Ch. 21K20) Tel. Rec. (See Model K1812E) ... 187-14

ZENITH—Cont.

K2240E, R (Ch. 21K20)	
Tel. Rec. (See Model K2230E)	187
K2258R (Ch. 19K23) Tel. Rec. (See Model K1812E)	184
K2260R (Ch. 21K20) Tel. Rec. (See Model K2230E)	187
K2263E (Ch. 21K20) Tel. Rec. (See Model K2230E)	187
K2266, R (Ch. 21K20) Tel. Rec. (See Model K2230E)	187
K2267E (Ch. 21K20) Tel. Rec. (See Model K2230E)	187
K2268R (Ch. 21K20) Tel. Rec. (See Model K2230E)	187
K2270H, R (Ch. 21K20) Tel. Rec. (See Model K2230E)	187
K2286R (Ch. 19K23) Tel. Rec. (See Model K1812E)	184
K2287R (Ch. 21K20) Tel. Rec. (See Model K2230E)	187
K2288E (Ch. 19K23) Tel. Rec. (See Model K1812E)	184
K2290R (Ch. 21K20) Tel. Rec. (See Model K2230E)	187
K2291E (Ch. 21K20) Tel. Rec. (See Model K2230E)	187
4G800 (Ch. 4E41)	35—27
4G800WZ, 4G800YZ, 4G800Z (Ch. 4E41Z)	52—23
4G903, 4G903Y (Ch. 4F40)	76—20
4K016 (Ch. 4C52)	6—39
4K035 (Ch. 4C53)	6—40
5D011, 5D027 (Ch. 5C01, 5C01Z)	3—17
5D810 (Ch. 5E02)	54—21
5G003 (Ch. 5C40)	17—35
5G003Z (Ch. 5C40Z)	
5G003ZZ (Ch. 5C40ZZ)	30—31
5G036 (Ch. 5C51)	30—32
5R080-5R086 (Ch. 5C02, 5C04)	4—4
6D014, 6D014W, 6D029, 6D029C (Ch. 6C01)	9—35
6D015, 6D015Y, 6D030 (Ch. 6C05, 6C05Z)	3—24
6D815, 6D815W, 6D815Y (Ch. 6E05)	55—24
6G001, 6G001Y (Ch. 6C40)	3—14
6G001YZ1 (See Model 6G001)	3
6G004Y (Ch. 6C41)	20—35
6G038 (Ch. 6C50)	32—30
6G801 (Ch. 6E40)	53—26
6R060	
6R084 (Ch. 6C21)	20—36
6R087 (Ch. 6C22)	7—32
6R886 (Ch. 6E02)	34—30
7H820, 7H820W (Ch. 7E01)	43—24

ZENITH—Cont.

7H822 (Ch. 7E02), 7H822WZ, 7H822Z (Ch. 7E02Z)	55—25
7H918 (Chassis 7F03)	75—18
7H920, 7H920W (Ch. 7F01)	77—13
7H921 (Chassis 7F04)	77—16
7H922 (Ch. 7F02)	83—15
7H923 (Ch. 7E06)	37—25
7R887 (Ch. 7E22)	54—22
8G005Y (Ch. 8C40)	7—33
8G005YT (Z1) (Ch. 8C40T) (Z1), 8G005YT (Z2) (Ch. 8C40T) (Z2)	53—27
8H023 (Ch. 8C01)	4—40
8H032, 8H033 (Ch. 8C20)	1—33
8H034 (See Model 8H023)	4
8H050, 8H051, 8H052, 8H061 (See Model 8H032)	1
8H832, 8H861 (Ch. 8E20)	52—24
9H079, 9H079C, 9H079R, 9H081, 9H082R, 9H085R, 9H088R (Ch. 8C21)	7—34
9H881, 9H882R, 9H885, 9H888R (Ch. 9E21)	43—25
9H984, 9H984LP (Ch. 9F22)	64—14
9H995 (Chassis 9E21Z)	74—12
12H090, 12H091, 12H092, 12H093, 12H094 (Ch. 11C21)	2—20
14H789 (Ch. 13D22)	41—24
27T965R (Ch. 27F20) Tel. Rec. (See Model G2951)	95
28T925 E, R (Chassis 28F22) Tel. Rec. (See Model 28T926E, 28T926R) (Chassis 28F25)	64—15
28T926E, 28T926R (Chassis 28F25) Tel. Rec. (See Model 28T925)	64
28T960, 28T961, 28T962, 28T963 (Ch. 28F20, 28F20Z, 28F21)	91—7
28T965R (See Model 28T925)	64
28T964R (Chassis 28F23) Tel. Rec. (See Model 28T925)	64
37T996 RLP (Ch. 28F23, 9E21Z) Tel. Rec. (See Model 42T999RLP and 9H995)	74
37T998 RLP (Chassis 28F20, 9E21Z) Tel. Rec. (See Model 28T925 (Set 64) and Model 9H995 (Set 74))	74
42T999RLP (Chassis 28F23, Radio Ch. 13D22) Tel. Rec. See Model 28T964R	74
Ch. 4C52 (See Model 4K016)	6
Ch. 4C53 (See Model 4K035)	6
Ch. 4E41 (See Model 4G800)	35
Ch. 4E41Z (See Model 4G800Z)	52
Ch. 4F40 (See Model 4G903)	76
Ch. 4H40 (See Model H-401)	156

ZENITH—Cont.

Ch. 4J40 (See Model H-401)	178
Ch. 4J60T (See Model J420T)	185
Ch. 4K01 (See Model K412G)	
Ch. 5C01, 5C01Z (See Model 5D011)	3
Ch. 5C02, 5C02Z (See Model 5R080)	4
Ch. 5C04 (See Model 5R080)	4
Ch. 5C40 (See Model 5G003)	17
Ch. 5C40Z, 5C40ZZ (See Model 5G003Z)	30
Ch. 5C51 (See Model 5G036)	30
Ch. 5E02 (See Model 5D810)	54
Ch. 5G01 (See Model G511)	85
Ch. 5G02 (See Model G510)	84
Ch. 5G03 (See Model G516)	109
Ch. 5G40 (See Model G500)	83
Ch. 5G41 (See Model G503)	99
Ch. 5G01 (See Model H511)	147
Ch. 5H40 (See Model H500)	152
Ch. 5H41 (See Model H503)	151
Ch. 5J03 (See Model J514)	176
Ch. 5K02 (See Model K510)	181
Ch. 5K03 (See Model J514)	176
Ch. 6C01 (See Model 6D014)	9
Ch. 6C05, 6C05Z (See Model 6D105)	3
Ch. 6C06 (See Model 7R070)	37
Ch. 6C21 (See Model 6R084)	20
Ch. 6C22 (See Model 6R087)	7
Ch. 6C40 (See Model 6G001)	3
Ch. 6C41 (See Model 6G004Y)	20
Ch. 6C50 (See Model 6G038)	32
Ch. 6E02 (See Model 6R886)	34
Ch. 6E05 (See Model 6D815)	55
Ch. 6E40 (See Model 6G801)	53
Ch. 6G01 (See Model G660)	96
Ch. 6G05 (See Model G615)	86
Ch. 6G05Z1 (See Model H615Z1)	178
Ch. 6G20 (See Model G2957)	98
Ch. 6H01 (See Model H61E)	125

ZENITH—Cont.

Ch. 6H02 (See Model H61E)	149
Ch. 6J02 (See Model J644)	172
Ch. 6J03 (See Model J616)	179
Ch. 6J05 (See Model J615)	182
Ch. 7E01 (See Model 7H820)	43
Ch. 7E02, 7E02Z (See Model 7H822)	55
Ch. 7E22 (See Model 7R887)	54
Ch. 7F01 (See Model 7H920)	77
Ch. 7F02 (See Model 7H922)	87
Ch. 7F03 (See Model 7H918)	75
Ch. 7F04 (See Model 7H921)	73
Ch. 7G01 (See Model G725)	101
Ch. 7G01Z (See Model H725)	135
Ch. 7G02 (See Model G724)	103
Ch. 7G01 (See Model G723)	104
Ch. 7H02 (See Model H724)	126
Ch. 7H02Z (See Model H724Z)	134
Ch. 7H02Z1 (See Model H724Z1)	163
Ch. 7H02Z2 (See Model H724Z2)	178
Ch. 7H04 (See Model H723)	122
Ch. 7H04Z (See Model H723Z)	134
Ch. 7H04Z1 (See Model H723Z1)	163
Ch. 7H04Z2 (See Model H723Z2)	178
Ch. 7J03 (See Model J733)	186
Ch. 7K20 (See Model K77E)	190
Ch. 8C01 (See Model 8H023)	4
Ch. 8C20 (See Model 8H032)	1
Ch. 8C21 (See Model 9H079)	7
Ch. 8C40 (See Model 8G005Y)	7
Ch. 8C40T(Z1), 8C40T(Z2) (See Model 8G005YT(Z1))	53
Ch. 8E20 (See Model 8H832)	52
Ch. 8G20 (See Model G881)	98
Ch. 8G20Z2 (See Model G3157RZ)	91A
Ch. 8H20 (See Model H880Z)	114
Ch. 8H20 Revised (See Model H880)	127
Ch. 8H20Z (See Model J880)	168
Ch. 9E21 (See Model 9H881)	43

ZENITH—Cont.

Ch. 9E21Z (See Model 9H995)	74
Ch. 9F22 (See Model 9H984)	64
Ch. 10H20 (See Model H2437E)	120
Ch. 10H20Z (See Model H2229R)	151
Ch. 11C21 (See Model I2H090)	2
Ch. 13D22 (See Model 14H789)	41
Ch. 19K20 (See Model K1812E)	184
Ch. 19K20Z, 19K23 (See Model K1812E)	184
Ch. 20H20 (See Model H2029R)	144
Ch. 20J21 (See Model J2026R)	159
Ch. 20J22 (See Model J2026R)	159
Ch. 21J20 (See Model J2026R)	159
Ch. 21J21 (See Model J2026R)	159
Ch. 21K20 (See Model K2230E)	
Ch. 21H20 (See Model H2226R)	114
Ch. 22H21 (See Model H2229R)	151
Ch. 22H22 (See Model H2229R)	151
Ch. 23G22 (See Model G2322) Tel. Rec. (See Model G2957)	98
Ch. 23G24 (See Model G2322Z)	91A
Ch. 23G24Z1 (See Model G2322Z1)	*
Ch. 23H22, 23H22Z (See Model H-2328E)	118
Ch. 24G20 (See Model G2420E)	93
Ch. 24G20-OX (See Model G2420E)	93
Ch. 24G21 (See Model G2454R)	93
Ch. 24G21-OX (See Model G2454-RX)	93
Ch. 24G24 (See Model G2441)	98
Ch. 24G24Z1 (See Model 3059R)	98
Ch. 24G26 (See Model G2437RZ)	91A
Ch. 24G26Z1 (See Model G2441Z1)	*
Ch. 24H20, 24H21 (See Model H2437E)	120
Ch. 27F20 (See Model 27T965R)	95
Ch. 28F20, 28F20Z, 28F21, 28F22 (See Model 28T925)	64
Ch. 28F23 (See Model 28T964R)	74
Ch. 28F25 (See Model 28T925)	64
Ch. 29G20 (See Model G2951)	95

RECORD CHANGERS

(CM-1) indicates service data also available in Howard W. Sams 1947 Record Changer Manual. (CM-2) indicates service data available in Howard W. Sams 1948 Record Changer Manual. (CM-3) indicates service data available in Howard W. Sams 1949, 1950 Record Changer Manual. (CM-4) indicates service data available in Howard W. Sams 1951, 1952 Record Changer Manual.

ADMIRAL

RC-150 (CM-1)	26—31
RC-160, RC-160A, RC-161, RC-161A (Supplement to RC-200)	(CM-1) 21—37
RC-170, RC-170A (CM-1)	31—2
RC-180, RC-181 (CM-2)	76—1
RC-182 Supplement (CM-2)	76—2
RC-200 (CM-1)	9
RC210, RC211, RC212 (CM-3)	72—1
RC-221, RC-222 (CM-3)	79—1
RC220, RC221, RC222 Changes (CM-3)	108—2
RC320, RC321, RC322 (See Model RC220 Changes) (CM-3)	108
RC400 (CM-4)	104—1
RC500 (CM-4)	132—2
RC550 (CM-4)	185—2

AERO

46A (CM-1)	19—34
47A (CM-2)	77—2

AVIOLA

100 (CM-1)	33—32
------------	-------

BELMONT

C-9 (CM-2)	34—31
------------	-------

COLUMBIA

104 (CM-2)	124—2
------------	-------

CRESCENT

C-200 (CM-1)	20—37
6 Series (CM-3)	89—4
250 Series (CM-2)	78—5
350 Series (CM-2)	80—3
500 Series (CM-2)	197—4

FARNSWORTH

P-51, P56 (CM-1)	13—36
P-72, P73 (CM-2)	75—8

GARRARD

RC-60 (CM-2)	81—7
RC80 (CM-4)	157—5

GENERAL ELECTRIC

P6 (CM-2)	79—8
-----------	------

GENERAL INDUSTRIES

RC130L (CM-1)	22—33
---------------	-------

GENERAL INSTRUMENT

204 (CM-1)	23—34
205 (CM-1)	10

LEAR

PC-206A (CM-1)	18—33
----------------	-------

MAGUIRE

ARC-1 (CM-1)	7
--------------	---

MARKEL

70, 71 (CM-2)	84—8
74, 75 (CM-3)	91—7
74, 75 Supplement	131—11

MILWAUKEE ERWOOD

10700 (CM-1)	16—37
11200 (CM-2)	86—6
11600 (CM-3)	73—7
12300 (CM-4)	138—5

MOTOROLA

B24RC, B25RC, B27RC, B28RC (CM-1)	12—35
RC30 (CM-2)	80—9
RC36, A (CM-4)	147—8
RC-36C (See Model RC36)	147
RC37 (See Model RC36)	141—8
RC40 (See Model RC37)	(CM-4) 141

OAK

6666 (CM-1)	19—35
9201 (CM-3)	111—10

PHILCO

D10, D10A (CM-1)	14—21
M-4 (CM-1)	25—30
M-7 (CM-1)	28—35
M-8 (CM-2)	83—7
M-9C (CM-2)	74—7
M-12C (CM-3)	109—9
M-20 (CM-3)	103—11
M22 (CM-4)	140—6

RCA

RP168 (CM-3)	72—10
RP-176 (CM-1)	25—31
RP-177 (CM-2)	44—27
RP-178 (CM-2)	79—12
RP190 Series (CM-4)	144—7

SEEBURG

K (CM-1)	11—36
L (CM-1)	24—34
M (CM-1)	32—19
S, SQ (CM-2)	78—12

SILVERTONE

101.761-2, 101.762-2 (CM-2)	77—10
101.761-3, 101.762-3 (CM-2)	83—11
101.762 (CM-2)	88—11

SPARTON

C48 (CM-2)	87—11
------------	-------

THORENS

CD-40 (CM-1)	39—29
--------------	-------

TRAV-LER

A (CM-3)	72—13
----------	-------

UNIVERSAL CAMERA

100 (CM-1)	36—30
------------	-------

UTAH

550 (CM-1)	8
650 (CM-1)	22—34
7000 (CM-1)	27—31
7001 (CM-2)	83—15

V-M

200-B (CM-1)	15—36
400 (CM-1)	26—33
400 (Late) (CM-2)	90—13
402, 400C (CM-2)	82—12
402D, 400D (CM-2)	87—14
404 (See Model 405) (CM-3)	73
405 (CM-3)	73—14
406, 407 (CM-3)	102—16
800 (CM-1)	21—33
800-D (CM-2)	84—12

RECORDERS

AMPRO

730(CM-4) 133-4
731 [For electrical unit see Folder 166-5; for mechanical unit see Folder 133-4]

BRUSH SOUND MIRROR

BK-401(CM-1) 42-25
BK-403(CM-2) 78-3
BK-416(CM-2) 81-4
BK-437, S, BK-439,
BK-441, BK-442,
BK-443P164-3

BRUSH MAIL-A-VOICE

BK-501, BK-502,
BK-503(CM-1)

CONCERTONE

1401 (401)(CM-4) 155-4

CRESCENT

H-1A(CM-4) 130-5
H-2A1 Series(CM-3) 119-4
H-19 Series
"Siena"(CM-4) 122-3
H-22A1125-4
M2000 Series(CM-4) 120-4

CRESCENT-Cont.

M-2001 Series (See Model M-2000 Series) 120

M-2500 Series (See Model M-2000 Series) 120

M-3000 Series (See M-2000 Series) 120

M-3001 Series (See Model M-2000 Series) 120

M-3500 Series (See Model M-2000 Series) 120

1000 Series(CM-2)

1000 Series Revised (CM-3) 77-4

CRESTWOOD

CP-201(CM-3) 118-4

DUKANE

11A55FF, 11B55187-5

EICOR

1000(CM-3) 90-4

EKOTAPE

101-4, 5, 102-4, 5, 103-4,
5, 104-4, 5(CM-3) 116-12

101-8, 101-9, 102-9,
103-8170-6

109, 110, 111,
112(CM-4) 152-5

114, 115, 116, 117189-8

GENERAL INDUSTRIES

R70, R90(CM-1) 35-8

250(CM-4) 143-8

INTERNATIONAL ELECTRONICS

PT3(CM-2) 88-4

KNIGHT

96-114 (CM-4)158-6

96-485183-8

96-499 (See Model 94-114) (CM-4)158

LEAR DYNAPORT

WC-311-D(CM-2) 80-8

MAGNECORD AUDIAD

AD-1R(CM-2) 84-7

PT6-A, AH, AHX, AX190-6

PT63-A, AH, AHX, AX (See Model PT6-A)190

MASCO

DC37R (See Model D37R) (CM-4)148

D37 (See Model D37R) (CM-4)148

D37R(CM-4) 148-9

LD37, LD37R (See Model D37R) (CM-4) 148

375(CM-3) 117-7

PENTRON

PB-A2, PB-1184-11

9T-3(CM-4) 153-10

9T-3C(CM-4) 162-9

RCA

MI-12875(CM-2) 85-12

RECORDIO (See Wilcox Gay)

RELEST

CIA(CM-4) 123-13

REVERE

T-100(CM-4) 149-11

TR-200 [For electrical unit see Folder 165-10; for mechanical unit see Folder 149-11]

T-70153, T-70157,
T-70163, T-70167,
T-70235, T-70257,
T-70263, T-70267,
T-77153, T-77157,
T-77163, T-77167,
T-77253, T-77257,
T-77263, T-77267193-9

SILVERTONE

70 (Ch. 567,230,
567,231)(CM-4) 121-11

771(CM-1) 26-32

101,774-2, 101,774-4
(CM-3) 114-10

ST. GEORGE

1100 Series(CM-1) 40-24

TAPE MASTER

PT-121186-14

PT-125198-15

WEBSTER-CHICAGO

79-80(CM-1) 37-26

178(CM-3) 113-12

210(CM-4) 159-17

228(CM-4) 156-13

WEBSTER ELECTRIC (See Ekotape)

WILCOX GAY

2A10, 2A10B, 2A11,
2A11B180-10

3A10, 3A11200-13

WIRE RECORDING CORP.

WP(CM-2) 76-19

ADDITIONAL PHOTOFAC T BENEFITS

From time to time, PHOTOFAC Folder Sets include valuable "bonus" aids, as well as useful data of a special nature. The fol-

lowing materials are extra benefits incorporated in the PHOTOFAC Folder Sets indicated, at no additional cost.

Set No.	
1	RTMA Production Source Code (Jan. 1, 1952)168
2	TRADE DIRECTORY—Paris Manufacturers 12
3	National Electrical Code on Antennas... 88
4	Record Changer Cross Reference by Manufacturer and Model.....118
5	Mica Capacitor Color Codes..... 48
6	Ion Trap Alignment..... 62
7	"Let's Look at the Sync Pulses"..... 64

Set No.	
8	Replacement of Disc & Plate Type Ceramic Capacitors 68
9	Certificate entitling subscriber to PHOTOFAC Volume Labels for Vols. 1-10... 62
10	Certificate entitling subscriber to PHOTOFAC Volume Labels for Vols. 11-20... 102
11	Certificate entitling subscriber to 100 Door Knob Hangers..... 80
12	Photofact Television Course appearing serially in.....38-51, 54

Set No.	
13	CR Tube Dimension Chart.....112
14	CR (Electromagnetic) Tube Characteristics Chart112
15	CR Tube Interchangeability Chart.....112
16	NPA maintenance and repair information130
17	Proposed Television channel allocation...132
18	General Electric Clock Data.....160

QUAM

Adjust-a-Cone SPEAKERS

QUAM FOCALIZER UNIT TRADE MARK

Tru-Match

OUTPUT TRANSFORMERS

QUAM ION TRAPS

ELECTRO-DYNAMIC SPEAKERS

PERMANENT MAGNET SPEAKERS

HIGH FIDELITY SPEAKERS

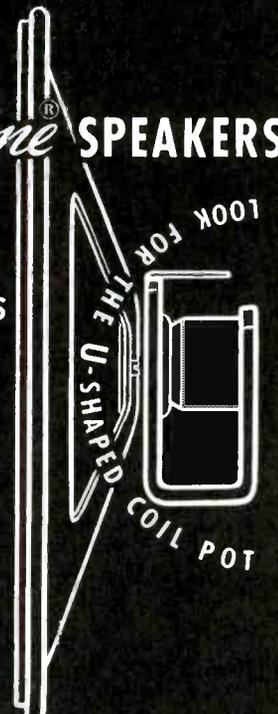
OUTDOOR THEATRE SPEAKERS

REAR SEAT AUTO SPEAKERS

TELEVISION SPEAKERS

INTER-COM SPEAKERS

CO-AXIAL SPEAKERS



LOOK FOR THE U-SHAPED COIL POT

QUAM-NICHOLS CO. 33rd Place and Cottage Grove, Chicago 16, Ill.

lator. Now, the purpose of the discriminator and the reactance tube is simply to control or regulate the frequency of the horizontal oscillator so that the latter keeps in step with the incoming horizontal sync pulses. The discriminator and reactance tube do not cause the oscillator to oscillate, nor do they have any control over the type of oscillations. All they do is to attempt to keep the oscillator on frequency. (They cannot even do this if the oscillator drifts too far off frequency.)

This being the case, let us look somewhat more closely at the sync discriminator and its companion reactance tube. The sync discriminator compares the operating frequency of the horizontal oscillator with the frequency of the incoming horizontal sync pulses. If a difference exists, then a DC voltage is developed. The voltage is positive when the oscillator frequency is too low, and it is negative when the oscillator frequency is too high.

These facts point to a fairly simple test to determine whether or not the discriminator circuit is operating as it should. Place a VTVM between the output of the discriminator and ground, as shown in Figure 2. Now tune in a television signal and rotate the horizontal hold control back and forth. This will cause the horizontal oscillator frequency to change and the output of the discriminator should vary in step. In the particular circuit shown, the DC output voltage should vary between +1 and -4 volts. The voltage goes more negative than positive because of the negative biasing voltage required by the following reactance tube.

In the absence of this DC voltage variation, it is necessary to determine two facts before assuming that the sync discriminator is at

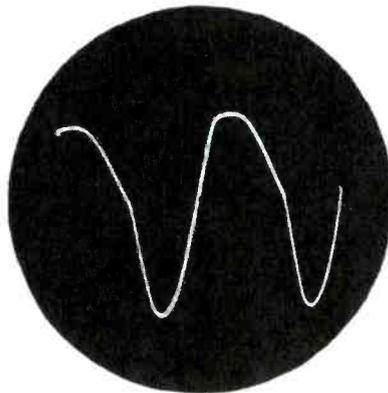


Figure 3. Waveform Which Is Present at Points A and B of Figure 2. Antenna Disconnected from Receiver.

fault. First, are the incoming sync pulses reaching the discriminator and, if so, is the oscillator signal reaching the sync discriminator, too? To check the latter, connect the vertical input of an oscilloscope between ground and each end of the oscillator-transformer discriminator winding in turn. (That is, between point A and ground and then point B and ground, Figure 2.) While performing this test, disconnect the receiver antenna to prevent the incoming sync pulses from interfering with the waveform observation.

The normal pattern to be obtained at the transformer ends is shown in Figure 3.

The next step, upon obtaining this pattern, is to reconnect the antenna and then remove the horizontal oscillator tube. (Remove only momentarily, since in some sets horizontal output tube or circuits may be damaged.) The horizontal sync pulse, as shown in Figure 4, should then appear at each end of the discriminator transformer winding.

Note that in the foregoing tests, each of the waveforms applied to the

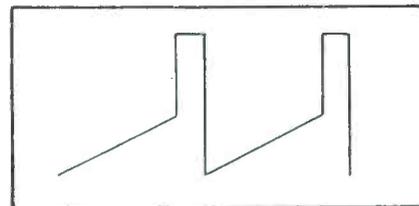


Figure 4. Waveform Which Is Present at the Ends of the Oscillator-Transformer Discriminator Winding When a TV Signal Is Being Received.

discriminator were checked individually. In this way, if any difficulty is encountered, we know where to look for it.

Returning to the DC correction voltage which is obtained from the sync discriminator, this is passed through a noise-immunity (or long time constant) network before being applied to the reactance tube. See Figure 5. The function of this network is to eliminate the effects of any noise impulses that may be present, and to permit only relatively slow changes in frequency of the sync pulses to affect the sweep oscillator. To determine whether the correction voltage is passing through this network, place the VTVM at the control grid of the reactance tube and again vary the horizontal hold control. The VTVM needle should swing back and forth, indicating that the DC correction voltage is present at the reactance tube. Failure of the meter to respond will point to an open R3 and R4 or to a shorted C5.

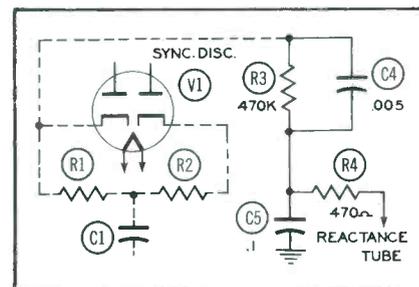


Figure 5. Between the Sync Discriminator and the Reactance Tube, There Is a Noise Immunity Circuit.

The noise-immunity network should also be checked to determine whether or not it is performing its filtering job properly. This is best done with an oscilloscope. Connect the vertical input terminals of the scope between the grid of the reactance tube and ground. If the network is performing correctly the waveform shown in Figure 6A will be observed. On the other hand, if the network is somehow defective, noise pulses will not be filtered out and

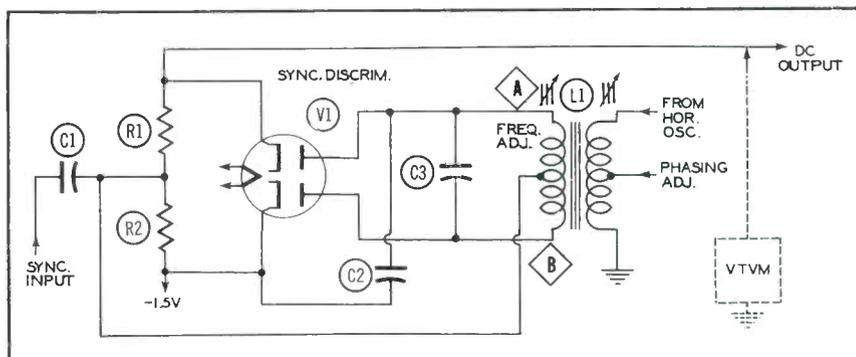
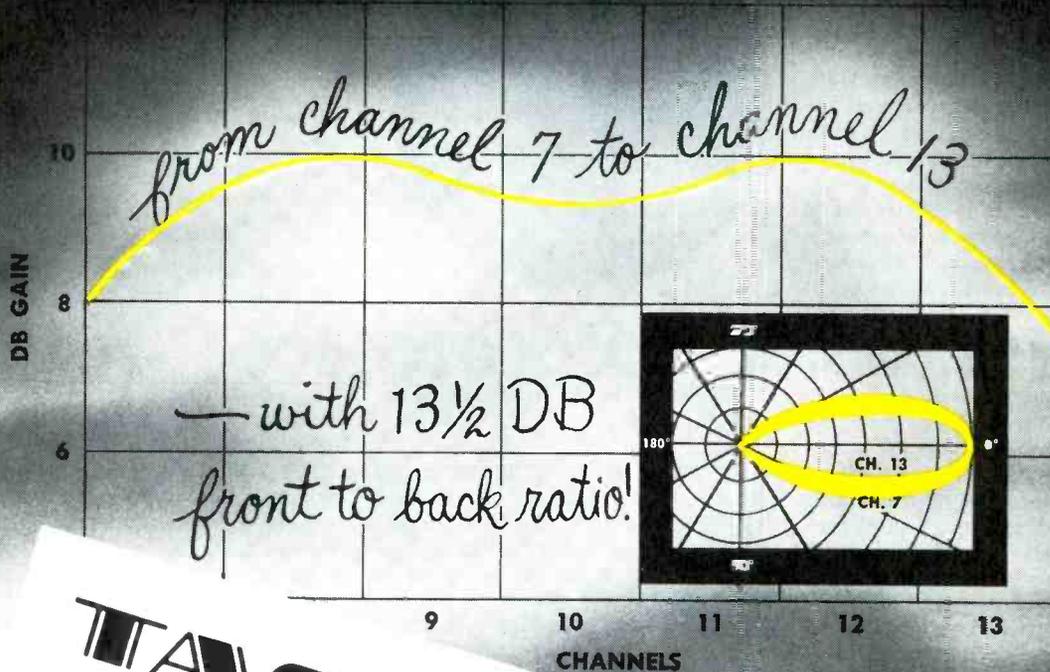
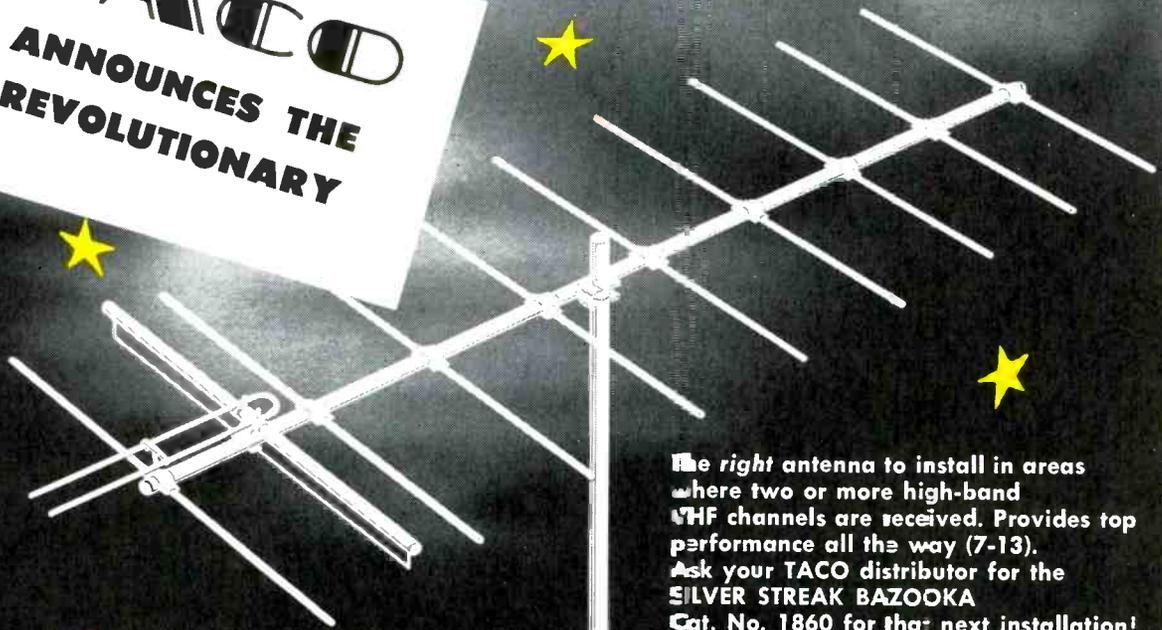


Figure 2. Simplified Circuit Diagram of the Sync Discriminator. A VTVM Should Be Connected as Shown to Check the Operation of the Circuit.

**THE IMPORTANT FIRSTS — COME FROM TACO FIRST...
 BAZOOKA-TUNED — ALL THE WAY!**



TACO
ANNOUNCES THE
REVOLUTIONARY



The right antenna to install in areas where two or more high-band VHF channels are received. Provides top performance all the way (7-13). Ask your TACO distributor for the SILVER STREAK BAZOOKA Cat. No. 1860 for that next installation!

Silver Streak

BAZOOKA

- ★ Single forward lobe for
- ★ Perfect Mechanical Balance — ideal
- ★ TACO Click-Rig construction

best signal-to-noise ratio.
 for use with rotor.
 elements positioned automatically.

TECHNICAL APPLIANCE CORPORATION,

SHERBURNE, N. Y.

In Canada: Hackbusch Electronics, Ltd., Toronto 4, Ont.

TACO ANTENNAS ARE SOLD BY LEADING DISTRIBUTORS FROM COAST TO COAST

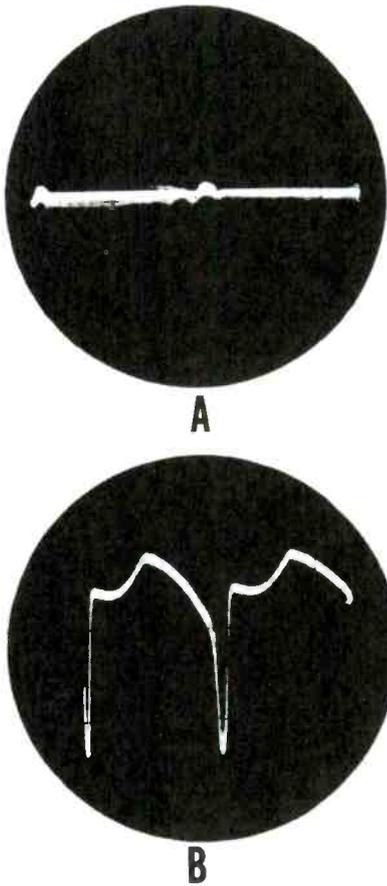


Figure 6. (A) Waveform at Grid of Reactance Tube When Noise Immunity Circuit Is Performing Properly. (B) Waveform Indication When Noise Immunity Circuit is Defective.

will appear on the oscillogram, as shown in Figure 6B. Here is a very conclusive test of the effectiveness of a filter network.

Remaining in this AFC system is the reactance tube and this can

usually be checked by voltage and/or resistance measurements. A screen by-pass capacitor, if open, will not be revealed in this manner but it can be tested by bridging another unit across it.

B. Pulse-Width AFC System.

This AFC system, shown in Figure 7, consists of a control tube, a noise filter, and a blocking oscillator. The control tube compares the frequency of the horizontal oscillator with that of the incoming sync pulses. If the two differ, a correction voltage is produced in the cathode circuit of the control tube. This same cathode circuit is also common to the grid of the blocking oscillator and so whatever changes in voltage occur here are felt at the grid of V1B.

The noise filter is formed by the combination of resistances and capacitors in the cathode leg of the control tube.

The pulse width AFC network leads itself very well to voltage and resistance analysis and also to a waveform check by means of an oscilloscope. In examining this circuit, Figure 7, it will be seen that the control tube receives two sets of voltages. One voltage comes from the sync separator stage and is the horizontal sync pulses. The other wave is parabolic-shaped (Figure 8) and it is obtained from the output of the horizontal blocking oscillator.

The first step in checking this circuit is to test the 6SN7 tube. If this is not the seat of the trouble, the next step is to determine if the control tube is receiving the voltages it should. To perform individual tests on these voltages, first remove the 6SN7 and check for the presence of the sync pulses at the



Figure 8.

grid of the control tube. When these have been seen, reinsert the 6SN7 and disconnect the antenna. This will remove the sync pulses and enable you to observe the feedback waveform (Figure 8) from the horizontal oscillator. Other waveforms of importance in this system are at the grid and plate of the horizontal oscillator. See Figure 9. Also check to see whether the proper saw-tooth deflection voltage is being produced at point "D".

The voltages on the control tube and on the horizontal oscillator are fairly critical. Hence, their values should be carefully checked against those specified in the service literature.

In the circuit of Figure 7, the positive voltages which are applied

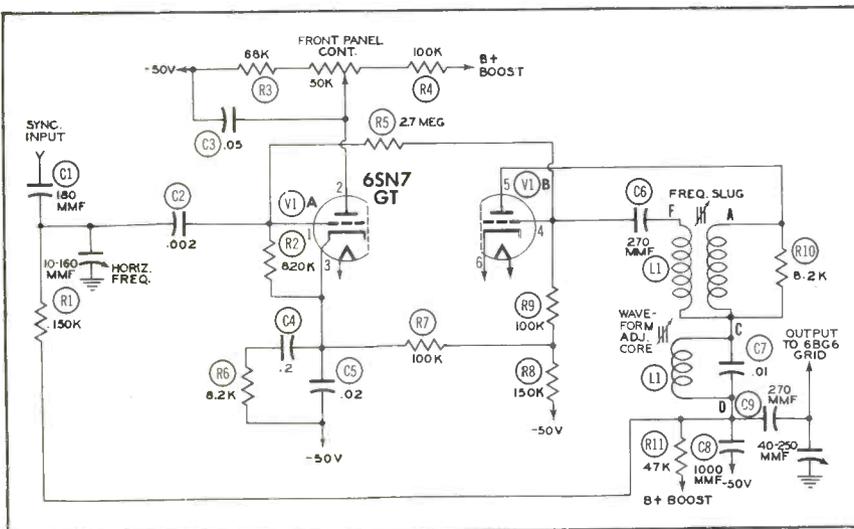


Figure 7. Schematic Diagram of a Pulse-Width AFC Circuit.

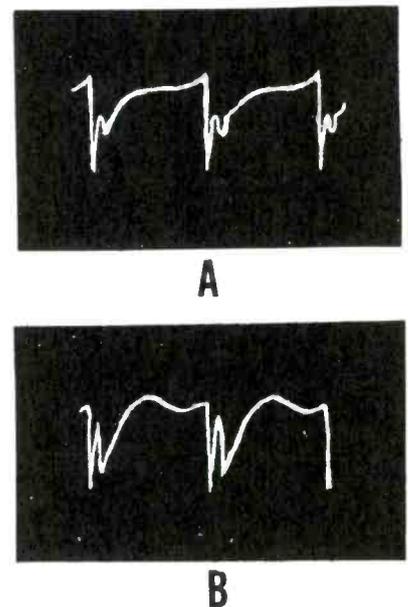
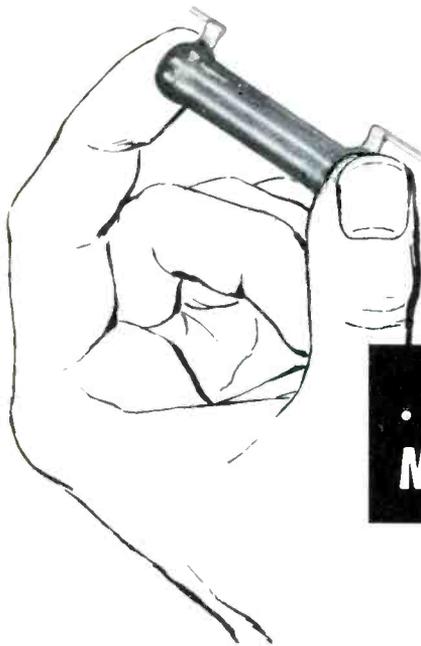


Figure 9. Other Waveforms of Importance in the Pulse Width System. (A) Grid of V1B, Figure 7. (B) Plate of V1B, Figure 7.



OHMITE *resistors*

**... for that EXTRA
MARGIN OF SAFETY!**

Customers judge your service by the results they get. If a radio or TV repair job fails to stand up, they blame you, not the parts you used.

Don't jeopardize your business reputation with "just-as-good" replacement parts. OHMITE resistors provide an extra margin of safety. You can depend on these quality resistors—wire-wound or composition—to give years of trouble-free service.



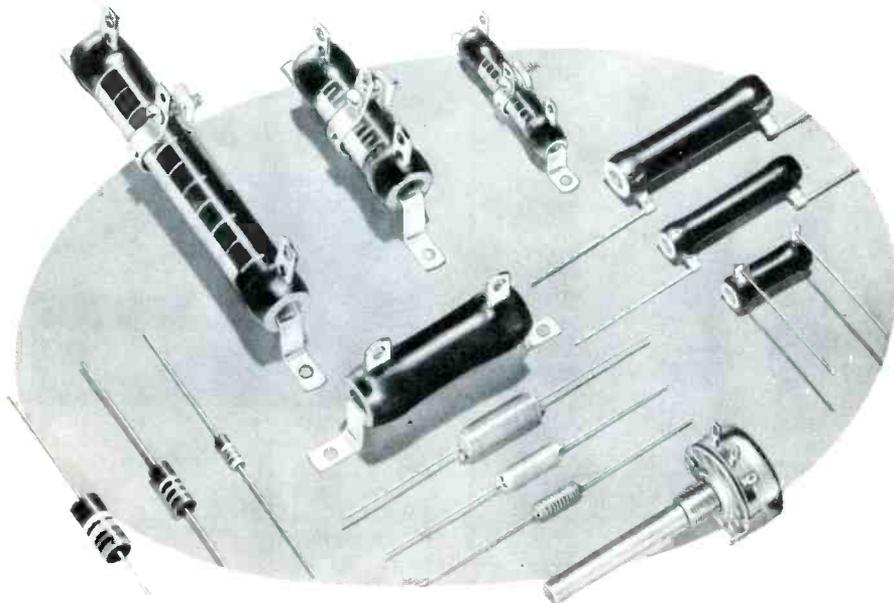
OHMITE MANUFACTURING COMPANY
4872 Flournoy Street, Chicago 44, Illinois

Send for stock catalog

*Be Right
with ...*

OHMITE®

DEPENDABLE RESISTANCE UNITS



to the control tube and the oscillator come from the "boost B+" point in the damper tube circuit. The development of the proper amount of "boost B+", in turn, depends upon the oscillator providing the horizontal output amplifier with the correct saw-tooth wave. Thus, the two are dependent upon each other.

To determine where the trouble lies, examine the saw-tooth wave produced by the oscillator. If its shape is correct, the chances are good that a low "boost B+" voltage is being caused by a defect in the deflection circuits. On the other hand, if the wave shape is distorted, concentrate on the oscillator and its control tube.

The pulse width AFC system is particularly sensitive to leaky capacitors. Should C2, C5, C4, C3, C6 or C1 become leaky, it will be found that the circuit will tend to drift out of synchronization. Changes in resistance values will also affect operation, although the tendency here is to make the operation more critical rather than to cause immediate drift. The stability of this system is also dependent upon the proper adjustment of the stabilizing circuit (this is the coil and capacitor between points C and D, Figure 7.)

DuMont suggests the following procedure for locating a leaky capacitor:

1. Bring the picture into sync by making the proper oscillator transformer adjustments.
2. Allow the set to warm up. At the first sign of drift, set the front panel hold control at its most critical point (that point where the picture just stays in horizontal sync).
3. Apply the heat of a soldering iron to the body of each suspected component for approximately 10 seconds.
4. When the leaky capacitor is heated, the picture will lose horizontal sync.

While only two AFC systems have been discussed, the same method of approach can be applied to any of the other AFC systems in use. It is a logical procedure, starting with tube testing, then working down to waveform checking, and finally to voltage and/or resistance measurements.

MILTON S. KIVER

OPERATION UHF
(cont'd. from page 19)

the car. This gave access to the end of the tower for changing antennas and it also allowed the rear gate, which needed to be swung around for trailer support, to be positioned at the center of the road. Figure 13 illustrates the positioning of the trailer. Most of our tests were made on side roads or in out-of-the-way places so that the traffic problem was not serious.

A very important step that was performed before each test was that of leveling the trailer. To do this, a carpenter's level was employed. When necessary one of the wheels was blocked up so that the tower could be raised in a true vertical position. The bar at the front of the trailer allowed for adjustment at that end. We were particularly careful about leveling the trailer when there was a strong wind. Since the tower itself affords considerable wind resistance when it is in the full "up" position, we took no chances in tipping over the whole unit. Figure 14 shows the tower in the full up position. When there was considerable wind it was found that care must be taken when letting the antenna down or the inside tower would stick to the slides. To alleviate this condition, it was necessary to crank it down slowly and if necessary vibrate the tower slightly. On one of the days there was an extremely strong wind, probably as strong as would be encountered when any normal operation of this type would be conducted, and there was no fear of the unit tipping over. However, the precaution of leveling the trailer and making sure

the side braces were tight was a necessity.

It should be pointed out that throughout our complete operation, which involved over 100 tests at several locations, there was no failure of any part of the trailer. The use of the large tires proved extremely satisfactory since it allowed us to carry only 15 pounds of pressure and even under full load, that is with two television receivers on the platform, plus the power plant and several antennas, the tires hardly flexed. The lower pressure allowed the tires to absorb a great amount of the road shock which would otherwise have been transmitted to the trailer.

During one of our test operations we wanted to check the effect of using different length standoff insulators. We decided to use the strap-on type units, and the triangular tower enabled us to mount sets of three, five, and seven inch insulators, a set on each corner. As a suggestion it might be wise to install a permanent set of insulators on a tower that is intended to be used for installation work. This will more closely approximate the actual conditions under which the antenna, transmission line and receiver will be called upon to operate. If no insulators are used at all during the initial tests, it may be found that the signal level is considerably lower after the lead-in is fed through the standoff insulators. The strap-on type should not be used for a permanent installation, particularly on a tower of the type which we employed. The straps, since they wrap around the outer



Figure 14. Tower Fully Extended.

supports, come in contact with the slide. On a permanent basis it would be much better to use the bolt or self-tapping type insulators.

We were particularly pleased with the operation of the trailer-tower throughout our field survey. After using it only a few times, we began to realize the potentialities of such a unit for not only the installer, but the salesman as well. The use of a unit of this type can aid the installing crew immeasurably in making sure that a satisfactory installation can be made at a given location. This is particularly true in fringe areas, or at points where ghost problems predominate.

Most of these trailer units are equipped with some sort of a platform, upon which receivers can be carried. Figure 16 shows our trailer unit with two table model TV receivers on the platform. Even the large console type receivers can be carried. The addition of a mast holder, as previously described, will also be helpful in carrying the necessary equipment to the point of installation.

From the sales viewpoint, a trailer-tower has infinite possibilities. It makes possible the demonstration of receivers, particularly in fringe areas, under actual operating conditions without having to put up a costly antenna installation. These demonstrations should prove extremely effective on UHF and dispel skepticism on the part of the potential customer as to the success of UHF reception.

From an operational standpoint, we experienced no difficulties of any kind throughout our two week survey period even though the



Figure 13. Trailer-Tower Positioning on Narrow Roads.

**more sales power — more selling strength
with new cellophane-packaged
HERCULES ANGLE-DRIVE
4-pronged Universal Vibrator**



the only vibrator with selling features:

- New revolutionary design means points won't stick—ever! Absolutely eliminates early failures for *complete* dependability!
- *Hushed* performance is built in! Insured for all mounting positions through improved sponge rubber suspension!
- Vibrators stay bright and sparkling new! Individually packaged in moisture-proof cellophane for added sales appeal!

Best of all—it's *competitively priced*, costs no more than old-style vibrators, bulk-packed!

The new Hercules is the *competitively priced* companion to a full line of JAMES AUTO AND COMMUNICATIONS replacement vibrators. See your Rep today for your complete vibrator requirements.

JAMES  **VIBRAPOWR COMPANY**

4036 NORTH ROCKWELL STREET, CHICAGO 18, ILLINOIS

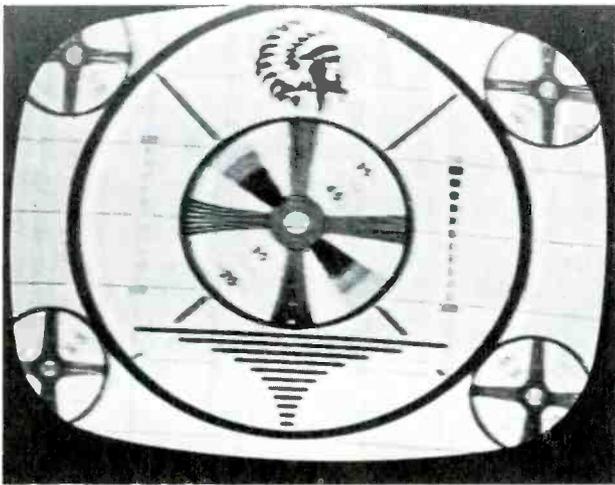


Figure 15. WSBT-TV Test Pattern.



Figure 16. Trailer-Tower Loaded with two TV Receivers.

trailer was pulled approximately 1200 miles. The tower itself was raised and lowered over 200 times. Considering the success that we had with this unit, we recommend that any sales or installing organization consider the possibilities of a mobile antenna tower as a piece of necessary equipment.

In summarizing our two week operation it was a general feeling among all those who helped in conducting the tests that UHF is a success. At times we were amazed at the quality of picture which could be received, sometimes under adverse conditions. This is especially true in areas where we expected to encounter extreme ghost difficulties. It was also true in outlying districts where it was felt that an extremely poor and weak signal would be received. In most instances the signal

was strong and clear, and most noticeable of all was the fact that there was no man-made interference problem. The gasoline-driven power plant, for instance, played havoc with any attempts to check VHF reception. However, at UHF frequencies there was no trace of interference of any kind from the ignition system of the power plant.

After making these tests at various distances from the transmitters, we arrived at a boundary between the primary and secondary area at 15 miles. The secondary area then extended to 25 miles. Beyond this we have chosen to classify as the fringe area. Elsewhere in this issue, particularly under the antenna discussion, complete details are given as to the problems involved in selecting the proper antenna at the various locations.

Figure 15 is a photograph of the test pattern received at the motel. No special attempt was made to get an exceptionally good picture for photographing purposes. At one of our test positions, which was located 20 miles from the transmitter, a good, acceptable picture was received with a variety of antenna types. We found that at any position within 25 miles of the transmitter we could receive a good, acceptable picture through proper selection of the antenna and lead-in combination. There were points even at 37 miles where a steady picture with only a moderate amount of snow present was obtained. Since no attempt was made at this particular position in stacking antennas to try to obtain a stronger picture, it was generally felt among the test crew that a careful installation could produce



Figure 17. Trailer-Tower in Front of Commercial Sound & Radio Co., South Bend, Indiana.



Figure 18. Transmitter of WSBT-TV, South Bend, Indiana.

Round holes
call for
round pegs!



to do the job right--

INSIST ON

CHICAGO

exact duplicate
TV Replacement Transformers
built-to-fit electrically and mechanically

Stop wasting your time and energy, stop losing money on replacements you have to hack and patch to make fit. **CHICAGO TV Transformers** are exact fits electrically and mechanically—they slip right into place; the leads are just right; the specs match the original. They're *right* for the job because **CHICAGO** has been making the world's toughest originals for years. Ask your distributor for **CHICAGO exact replacements—and be sure.**



TP-358

Exact duplicate power transformer for Zenith Nos. 95-1260 and 95-1282.



TBO-1

Exact duplicate vertical blocking oscillator unit for RCA No. 71418. (Type No. 208T2)



TSO-2

Exact duplicate vertical scanning output unit for Motorola No. 25K489134.



FREE! TV Replacement Catalog

Write for your copy of **CHICAGO'S** latest Exact Duplicate TV Transformer Catalog—get acquainted with your complete guide to every replacement requirement. Do every job *right*—ask your distributor for **CHICAGO** built-to-fit replacements.

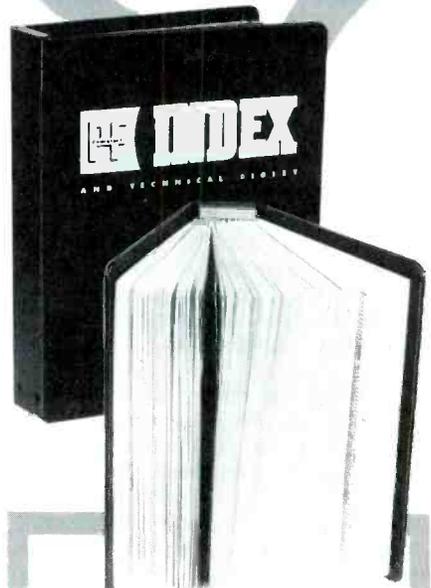
CHICAGO TRANSFORMER

DIVISION OF ESSEX WIRE CORPORATION

3501 ADDISON STREET, CHICAGO 18, ILL.



NOW
Library Binder
for your copies of
PF INDEX
AND TECHNICAL DIGEST



- ★ An unusually handsome and sturdy library binder in which to keep your copies of **PF INDEX**.
- ★ Bound in blue library fabric and stamped in gold leaf.

ORDER YOUR BINDER NOW

from your parts jobber or send check or money order for \$2.50 for each binder to:

PF INDEX
AND TECHNICAL DIGEST
2201 EAST 46TH STREET
INDIANAPOLIS 5, INDIANA



Say It With Service!
 *For All Applications—33 1/3, 45, or 78 R.P.M.—These
 Shure Replacement Cartridges Assure Superior Performance



W 42 BH

78

This "Dual Voltage" cartridge is an excellent all-around replacement for old-style 78 r.p.m. cartridges. It guarantees improved performance in many cases. A unique "Slip-On" condenser harness provides choice of output voltage—1.5 with condenser harness installed and 3.75 without condenser. For fine quality at low cost your best bet is the Model W42BH at only \$4.95 list.



W 31 AR

WC 31 AR

33 1/3

45

This high output (2.1 volts!) "Direct Drive" cartridge was specifically designed for use with all fine-groove records. Universal mounting bracket provides quick, easy installation in RCA-type 45 r.p.m. changers. (Fits 1/2" and 5/8" mounting centers.) Has easy-to-replace needle. For maximum quality, highest output, and low cost, specify Model W31AR at the low list price of only \$6.50

33 1/3

45

Also available as ceramic cartridge (same price)—Model WC31AR. Highly recommended in areas where heat and humidity make use of conventional crystal cartridges impractical. List price..... \$6.50



W 26 B

33 1/3

45

This "Vertical Drive" "all-purpose" cartridge provides superlative reproduction for all types of records. Low tracking pressure (only 6 grams) and high needle compliance guarantee faithful tracking and longer record life. Uses exclusive Shure "Unipoint" needle, scientifically designed for maximum performance and long life. List price..... \$7.50

78



W 22 AB

33 1/3

45

This "Vertical Drive" "turnover-type" cartridge provides extended frequency response (50 to 10,000 c.p.s.) at extremely low needle point pressure—only 8 grams. One of the most popular, widely used cartridges in original equipment. Highly recommended as replacement in phonographs equipped with turnover mechanism. Individual needles—one for fine-groove and the other for standard records—guarantee maximum results. List price..... \$9.50

78



W 22 AB-T

33 1/3

45

Offers all the advantages provided by the Model W22AB, plus a long-life turnover mechanism. Furnishes replacement of old, worn-out turnover mechanisms as well as cartridges. Also an excellent replacement for converting all-purpose phonographs into turnover type. List price..... \$10.00

78

Patented by Shure Brothers, Inc., and Licensed under Patents of the Brush Development Co.



SHURE BROTHERS, Inc. ☆
 225 W. HURON ST., CHICAGO 10, ILL.

Manufacturers of Microphones
 and Acoustic Devices
 Cable Address: SHUREMICRO

**ELIMINATE
 CORROSION OF
 ANTENNAS**

**HELP PREVENT
 CORONA WITH**



100% ACRYLIC



**JUST PRESS
 THE
 BUTTON**

Krylon is a tough, quick-drying Acrylic coating that has become a "must" in TV service. Because of its high dielectric strength it helps prevent corona. Spray it on high voltage coil and insulation, the socket of the high voltage rectifier and component parts of the rectifier circuit.

Krylon is nationally advertised.

USE THE KRYLON FAMILY



CLEAR rustproofs, waterproofs, insulates. Goes on clear and stays clear.



ALUMINUM is non-conductive. Protects and insulates.



WHITE is popular for touching up chipped white goods. Will not discolor.



BLACK is newest Krylon product. Use for touch-up, stenciling and marking.

TECHNICAL CHARACTERISTICS
 Dielectric constant—2.8 to 3.4 (1,000 cycles)
 Dielectric strength—400 to 800 (number of volts necessary to cause electric arc through Krylon coat one mil thick)
 Electrical resistance—10¹⁰ ohms/cm³



In U.S.A. and CANADA
 SEE YOUR JOBBER
 Or Write Direct
 Department 2503

KRYLON, Inc.
 2601 N. Broad St., Philadelphia 32, Pa.

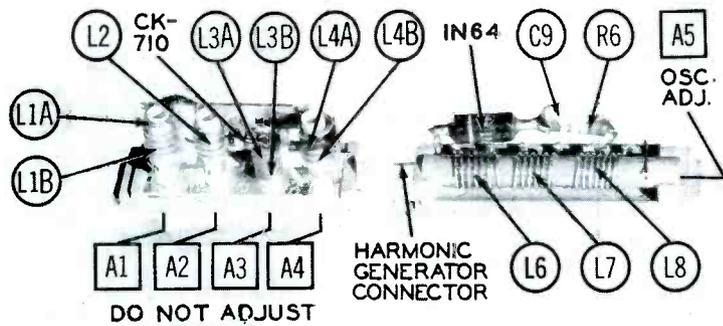


Figure 6. "34Q" UHF Strips Showing Component Placement.

These additional components, which consist of a resistor, capacitor, and crystal, can be seen in Figure 6, and are shown dotted-in on the schematic of Figure 7.

The second conversion takes place in the mixer tube (V2A) in a manner similar to that employed during VHF reception. Again let us consider the two frequencies involved with the input of the mixer stage. First of all, the inductance of L6 is such that it resonates at the variable IF frequency which was applied to the input of the RF amplifier. L7 is also tuned to this same frequency. The inductance associated with the oscillator circuit is L8. This coil is equipped with a variable brass core which is accessible through the adjustment hole in the front of the tuner. This is the ONLY ADJUSTMENT That Need be Made On The UHF Strips. As can be seen in Figure 6, L6 and L8 are placed on either side of L7 providing coupling of the oscillator signal and the variable IF signal to the mixer grid. The output of the second converter is the video IF frequency of the receiver.

In reviewing the double conversion process one very unique feature comes to mind. This is the fact that double conversion is accomplished with only one oscillator stage. This is accomplished through the use of harmonics of the local oscillator to fundamental frequency of operation.

Although a description of the operation of these strips is, of necessity, a rather lengthy discussion, it should be studied carefully as it is quite important that the technician understand their operation in order to properly install and diagnose troubles.

Installation Procedure -

The installation of these strips in a tuner is quite simple. After the proper strips are obtained, determine which VHF strips are to be removed. These, of course, should be those upon which no signal can be received in that particular area. After this is determined, remove both the antenna and oscillator-converter strips from the tuner. The UHF antenna strip (5 contact) should be installed

in the tuner first. Figure 8 illustrates this installation step. When installing the UHF oscillator-converter strip (6 contact), the harmonic generator output prong must be engaged into the small socket provided on the companion strip (see Figure 9). Take care that this prong is not bent. When properly lined up, the strip will go into place without forcing it. If a bottom cover was employed on the tuner it should be replaced. This completes the actual installation of the UHF strips. The next step is the adjustment of the oscillator slug. Turn on the receiver and rotate the station selector knob to the position at which the strips were installed. Allow at least five minutes warm-up time (preferably fifteen minutes) before adjusting the oscillator slug. Set the fine tuning control to the midpoint of its range and, using an insulated alignment screw driver, adjust the oscillator slug for best sound and picture. Only a SLIGHT ADJUSTMENT of This Core Should Be Made. If this slug is turned too far in either direction, a different mode of operation might, in a few cases, be found. This improper setting, however, will result in inferior performance.

The physical size of the UHF strips prevents the use of two UHF strips in adjacent positions in the turret. This limits the number of UHF strips that can be used in a given tuner, to six. There is no set order that need be followed in installing the strips. They may be installed in any desired order but do NOT attempt to install 2 UHF strips next to each other as damage to the strips will result.

Many TV receiver selector knobs are designed so that the channel numbers can be attached directly to the knob. Since the regular sequence of channels is broken after the UHF strips are installed, it is a definite advantage to identify the UHF channel positions. This is possible by means of channel number strips which are supplied by some of the receiver manufacturers. Figure 10 shows a set of these tab number sheets which are supplied by Majestic for use in conjunction with their receivers. In this particular case, the backs of the sheets are gummed so that they may be attached directly to the selector knob. When obtaining UHF strips from the distributor, it might be well to check to see if such tab number sheets are available for the particular model receiver in which the UHF strips are to be used.

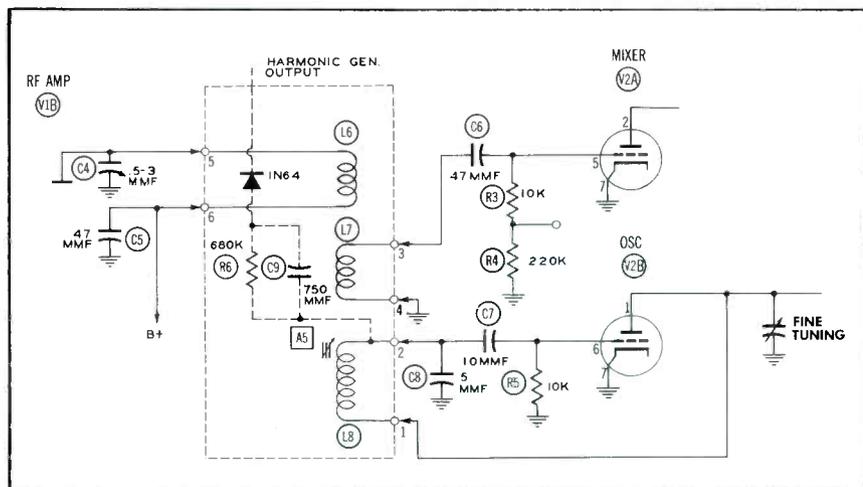
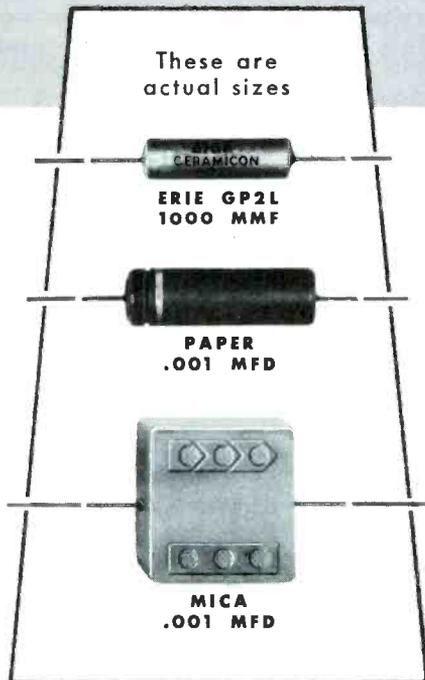


Figure 7. RF Plate, Mixer Grid and Oscillator Circuits.

**NO WONDER THE
TREND'S
TO CERAMICONS®**

**Compare ERIE size with
other types of capacitors**



Size . . . Ceramicons are small enough that they fit in any space. This compactness makes replacement of any type easier with the correct Ceramicon.

Stability . . . The rugged construction makes Ceramicons impervious to moisture and even the most severe climatic conditions.

Price . . . Ceramicons are equal or lower in price than corresponding values of paper or mica capacitors.

ERIE components are stocked by leading electronic distributors everywhere.

ERIE
RESISTOR CORP.

ERIE RESISTOR CORPORATION . . . ELECTRONICS DIVISION

Main Offices: ERIE, PA.

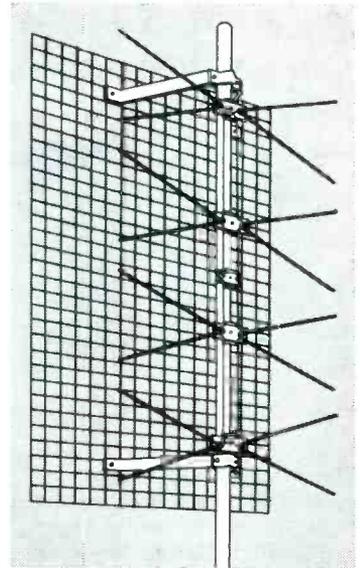
Sales Offices: Cliffside, N. J. • Philadelphia, Pa. • Buffalo, N. Y. • Chicago, Ill.
Detroit, Mich. • Cincinnati, Ohio • Los Angeles, Calif.

Factories: ERIE, PA. • LONDON, ENGLAND • TORONTO, CANADA

**PHOENIX
TYPE PAR-107**

**ULTRA
4-BOW**

with REFLECTOR
CHANNELS 14-83
High gain—300
ohm impedance



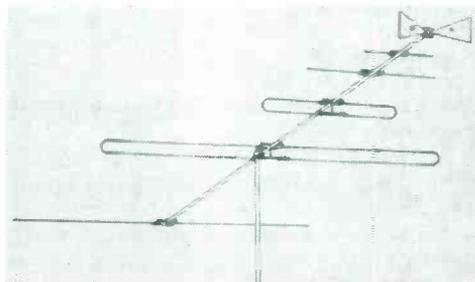
PHOENIX

uhf

Speed-tennas

**PHOENIX
TYPE
PAR-105**

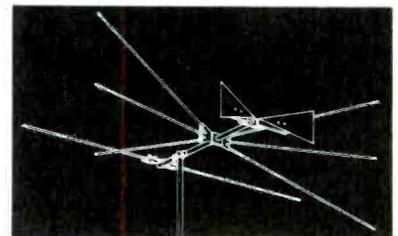
**NEW
UHF-VHF
ALL
CHANNEL
2-83**



**PHOENIX
TYPE PAR-103**

**NEW UHF-VHF
ALL CHANNEL**

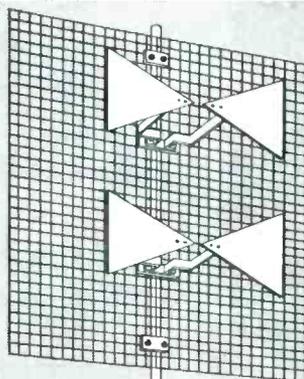
One antenna,
one transmission
line does the job
for all channels, 2-83



**PHOENIX
TYPE PAR-102-2X**

ULTRA HI BOW

with screen reflector
stacked
Channels 14-83
High gain
300 ohm impedance



WRITE FOR CATALOG

**PHOENIX ELECTRONICS, INC.
LAWRENCE, MASS.**

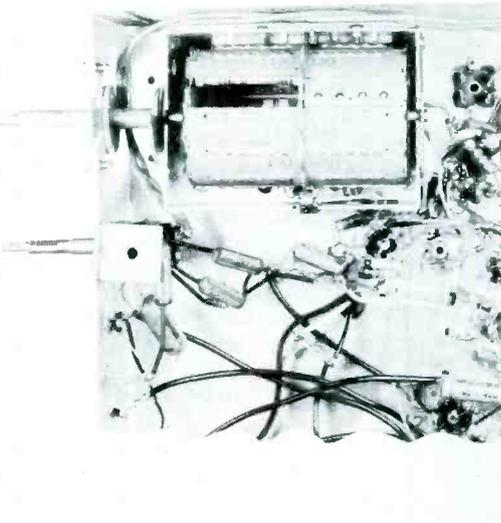


Figure 8. Set with UHF Antenna Strip Installed.

Another use for these UHF strips is their incorporation in Standard Coil tuners employed in Field Strength Meters. The Simpson Model 488 Field Strength Meter employs a series 200 Standard Coil tuner. One of these meters was used in our South Bend field survey. Although our sensitivity measurements were taken with a RCA U2 converter coupled to the Field Strength Meter input, a channel 34 strip was installed and used for monitoring purposes during our tests. This set up provided for two methods of operation and a double check in the event that equipment failure was suspected.

The installation of these strips in the Field Strength Meter is identical to those previously described. The oscillator slug should be adjusted to provide maximum field strength reading. Again, the oscillator slug should be turned only a slight amount. Otherwise improper operation will result. Figure 11 shows the UHF strips being installed in the Simpson Model 488 Field Strength Meter.

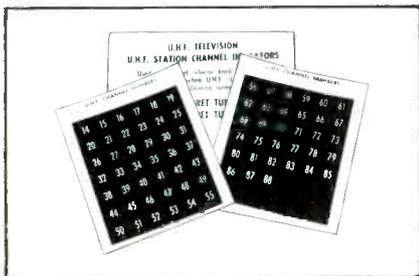


Figure 10. UHF Channel Tabs.

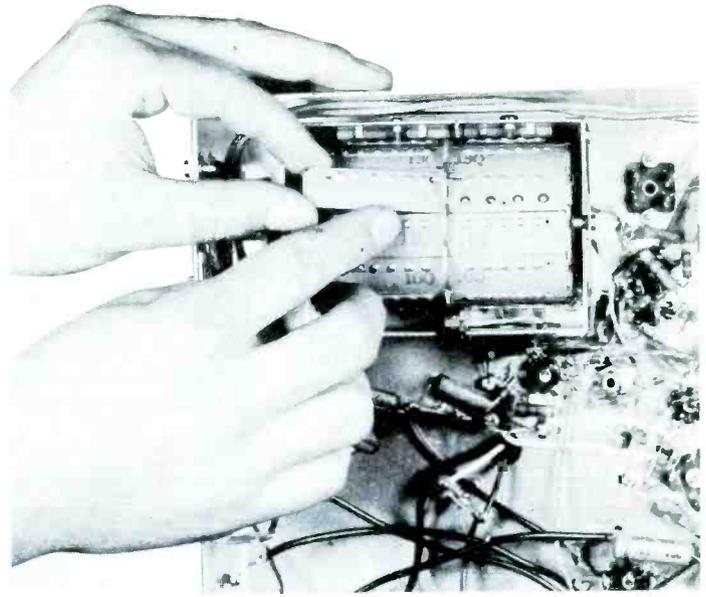


Figure 9. Installing the UHF Oscillator-Converter Strip.

The use of UHF strips in Standard Coil tuners, when properly installed, should prove very successful, particularly in strong signal areas. Since no provision is made for separate UHF antenna connections, the VHF antenna will normally be tried for UHF reception. Our experiences during our field survey indicated that this practice will usually be successful within 10 miles of the transmitter. Of course, many variables will effect the success of this plan of operation. Such things as obstructions, terrain, and of great importance the power output of the transmitting station, are but a few of the things which will effect operation. If greater pickup is required to provide satisfactory reception, an

all-channel antenna or separate VHF and UHF antennas, with a coupling device that will provide single lead-in operation, should be installed. Either setup will eliminate the necessity of switching from one antenna to the other when tuning from VHF to UHF channels.

Summarizing our experiences with these UHF strips during our field survey, I would say that satisfactory results were obtained in every case. After making the necessary oscillator slug adjustment, no further adjustments were required. The units were very stable and any retuning which was required during warm-up was hardly noticeable.

W. W. HENSLER, an

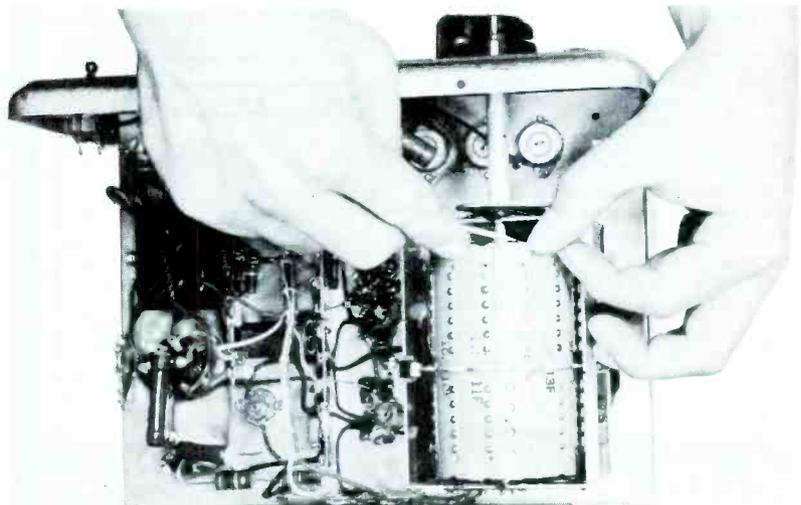


Figure 11. Installing UHF Strips in a Simpson 488 Field Strength Meter.

FISHBOWL. A cute sales gimmick seen in a country fair tent of an appliance dealer was a goldfish bowl filled with nickels, dimes and quarters. Anyone buying one of the appliances could reach into the bowl with one fist and bring out his down payment. This stunt could be applied equally well to TV set sales. The prospect of getting money for nothing appeals to people, yet there are few hands that can hold anywhere near the equivalent of a 10 per cent discount on the average TV set. Try it.

CRASH. Just as the 40-foot, 2,000-lb UHF antenna of York, Pennsylvania's channel-43 WSBA-TV was within a few feet of its final position atop a 380-foot tower, an eyebolt let go and the antenna plunged to ruin. Fifteen feet into the ground it went, a total loss. Though covered by insurance, it meant delaying the debut of the UHF station. One workman atop the tower was whiplashed by a steel cable attached to the antenna, receiving leg cuts and a fractured elbow. In similar accidents several years ago, TV and FM antennas crashed in Philadelphia and Dallas when almost up.

JOHN MARKUS

vision receiver, which in most cases is the open back box or baffle. This type (Figure 1), which includes the flat baffle, gives a very uneven response with deep valleys and high peaks, due mainly to the front and back sound waves cancelling or adding at various frequencies and the effects of the resonant frequency of the speaker itself. This unevenness is most noticeable as a boominess in the reproduction of speech and music. The open back cabinet would have to be very large, so as to approach an infinite baffle, if these ragged effects are to be overcome.

The totally enclosed or infinite enclosure (Figure 2) completely isolates the front and back wave. In fact the radiation from the back of the cone is eliminated by using a sufficiently large well-braced box, padded to kill reverberation. To be effective and obtain good low-frequency response, the cubic content must be larger for larger speakers. But there is a definite limit, for above a certain point there is no lowering of response with an increase in size. The response is fairly smooth, other than for a broad resonant point slightly higher than the natural resonant frequency of the speaker. This can be a very satisfactory system if a suitable speaker is used and the cabinet is of sufficient size.

The vented enclosure, better known as the bass reflex (Figure 3) has been, and is, a very popular enclosure. Excellent results can be attained with this type; good low-frequency response with no extreme peaks or dips, and in a moderately sized cabinet, IF (this "if" is the important thing) the enclosure is designed for, and tuned for, the particular speaker used with it. Otherwise, the bass reproduced will be very boomy, with a certain few low tones greatly emphasized.

The horn is practically ideal for converting the electronic signal to acoustical power, since a correctly designed horn operates as a transformer to couple the speaker efficiently to the air. Here we will concern ourselves chiefly with the horn type enclosures (Figure 4) for use with cone speakers. The horn has the disadvantage of large size, since it must have sufficient length and mouth area in order to give good low-frequency response. To overcome this disadvantage of size, various folded horn enclosures

Exclusive!

External Control Method Satisfies All R-C Network Variations



THE FIFTH LEAD DOES THE TRICK!

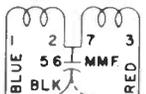
HALLDORSON DF601 & DF602

NO MORE DIGGING INTO THE YOKE TO SOLVE YOUR NETWORK PROBLEMS...

Whether inductive or autoformer horizontal output coupling is encountered, the "anti-ringing" capacitor in the yoke may be properly positioned to satisfy the circuit requirements. This Halldorson external switching feature is provided in the most used deflection yokes (8.5 to 14 mh.). Here is another "First" by Halldorson—actually priced lower than competitive units not having the plus features of DF601 & DF602. Bulletin No. 110 gives complete details.

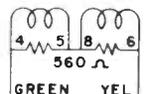
HALLDORSON TRANSFORMER COMPANY
4500 N. Ravenswood Avenue
Chicago 40, Illinois

HORIZONTAL COILS



BLUE 56 MMF BLK

VERTICAL COILS



GREEN 560 Ω YEL

Fifth lead places capacitor across either half of horizontal windings by merely joining the black lead to either the blue or red lead.

Direct-Drive Yokes



Haldorson DF603 & DF604 heavily insulated at 6,000 volts! See Bulletin No. 109



Halldorson

QUALITY Transformers SINCE 1913

EXPORT: Intex Co., Inc., 136 Liberty St., New York 36, N.Y. Cable Address: Intexcom, N.Y.

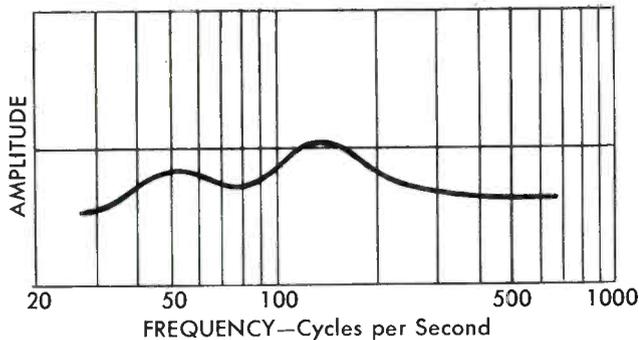
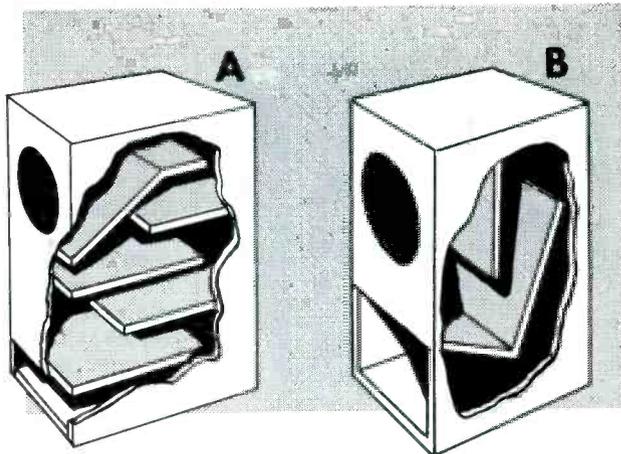


Figure 5. (A) Acoustical Labyrinth. (B) Exponential Acoustical Labyrinth With Impedance Curve.



have been designed, resulting in very good operation with cabinets suitable for installation in rooms of moderate size. Horns make an interesting subject which we hope to discuss at greater length later.

The acoustical labyrinth (Figure 5) has been used in various forms since it can be constructed in a fairly small cabinet, and does have the effect of lowering the resonant frequency of the speaker, thereby affording good low-frequency response. The labyrinth is sometimes built in such a rate of expansion (Figure 5B) that it is actually a horn.

These basic forms have been used in all manner of variations and combinations, making them sometimes hard to recognize. To classify and try to explain the operation and theory of all the available speaker systems would fill many books. But broken down to basic ideas, most of it would be found to be very interesting and easily understood.

The curves included with the drawings illustrate the impedance readings obtained at the lower frequencies, when experimenting with the various type enclosures. The impedance of the speaker at these frequencies does have a great influence upon the bass response, although the extreme peaks are smoothed out considerably by the damping action of most high quality power amplifiers. Of course such curves vary with different enclosures of the same type and with different speakers, but those shown are typical.

We have done some experimenting with speakers and enclosures and will endeavor to prepare some detailed articles in subsequent issues.

ROBERT B. DUNHAM

“Quick-Service” Capacitor Kits in handy crystal clear plastic cases!



... and you
pay only for the
capacitors. The case
costs you nothing!



6 basic kits to service over 85% of your twist-prong electrolytic capacitor replacement needs. Transparent case is excellent storage bin for screws, other small parts—even for fishing tackle. See your local Cornell-Dubilier jobber today for details. Cornell-Dubilier Electric Corp., South Plainfield, New Jersey.

A service of
CORNELL-DUBILIER
world's largest maker of capacitors

PLANTS IN SO. PLAINFIELD, N. J. • NEW BEDFORD, WORCESTER AND CAMBRIDGE, MASS. • PROVIDENCE, R. I.
INDIANAPOLIS, IND. • FOUQUAY SPRINGS, N. C. • SUBSIDIARY, RADIART CORP., CLEVELAND, OHIO

536K Multimeter Kit \$12.90
Wired \$14.90
1000 ohms/volt



425K 5" Scope
Kit \$44.95
Wired \$79.95.



YOU BUILD
EICO
KITS
IN ONE
EVENING-
but they
last a lifetime...
and you save
50%!

22 Kits and 24 Instruments —
the industry's most complete
line of **MATCHED**
TEST INSTRUMENTS!

Over 1/4-million EICO Instruments are now in use the world over! That's the proof of EICO's leadership in **Value to the Serviceman!**

For latest precision engineering, finest components, smart professional appearance, lifetime performance and rock-bottom economy — see and **compare** the EICO line at your jobber's today **before you buy any higher-priced equipment!** You'll agree with over 100,000 others that only EICO Kits and Instruments — no other — give you the industry's greatest values at lowest cost.

Write **NOW** for
FREE latest Catalog
PF-3

221K VTVM Kit \$25.95.
Wired \$49.95.



565K Multimeter Kit \$24.95.
Wired \$29.95.
20,000 ohms/volt.



320K Sig. Gen.
Kit \$19.95. Wired \$29.95.



360K Sweep Gen.
Kit \$34.95. Wired \$49.95.



1040K Battery Elim.
Kit \$25.95. Wired \$34.95.

**Laboratory
Precision
at Lowest Cost**

Prices 5% higher on West Coast.

625K Tube Tester
Kit \$34.95.
Wired \$49.95.



©1952 **INSTRUMENTS & KITS**
ELECTRONIC INSTRUMENT CO., Inc.
84 Withers Street, Brooklyn 11, N. Y.

UHF CONV. (cont'd from page 33)

tween the receiving equipment and the connections of the transmission line. In Figure 8A separate lead-ins are employed for the VHF and the UHF antennas while a matching unit for a common lead-in is shown connected in Figure 8B. Note that in those cases where it is desired to use a VHF booster and a UHF converter, the VHF booster is placed between the VHF antenna and converter, and not between the UHF converter and receiver. The latter arrangement would not impair VHF reception, but UHF reception may be

impaired due to the addition of the switching arrangement in the booster being placed between the UHF converter and receiver. Thus the booster and the converter should be connected as shown in Figure 8A.

If the system of using a common transmission line proves to be extremely popular, antenna matching units may be installed in the future inside the receiving unit at the manufacturing level. Thus only one terminal strip need be used to receive the input from a common lead-in for both VHF and UHF reception.

Ward Products Corp. and the JFD Manufacturing Company have

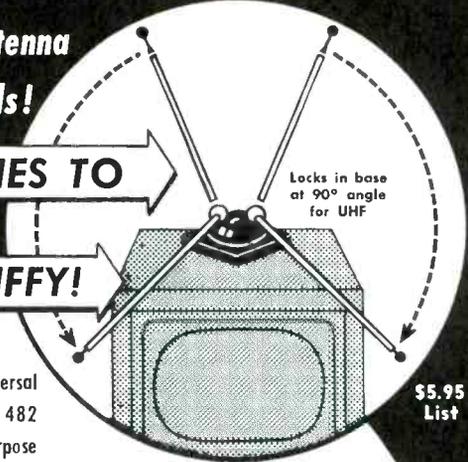
ANOTHER *Brach* FIRST!

BRACH UNIVERSAL MODEL 482

the ONE Indoor Antenna
for ALL TV Channels!

VHF SWITCHES TO

UHF IN A JIFFY!



Locks in base
at 90° angle
for UHF

\$5.95
List

Only the Brach Universal
Indoor Antenna 482
provides dual-purpose

reception for all VHF and UHF channels. Revolutionary new design—an eccentric rotating joint in the base—permits switching from a vertical V for VHF to a locked horizontal V position for UHF. Available for immediate delivery!

CHECK THESE FEATURES

- Smooth ball-socket action and spring tension insure fixed location of elements and tight contact.
- Elements extended for VHF . . . fully retracted for UHF.
- VHF and UHF position markings are molded into base.
- Base is finished like fine furniture and is weighted to prevent tipping.

Write for details and prices. Technical article
"How to Select UHF Antennas" also available.



MANUFACTURING CORP.
Quality-Engineered TV & Radio Products

Division of General Bronze Corp.

200 CENTRAL AVENUE, NEWARK 4, NEW JERSEY

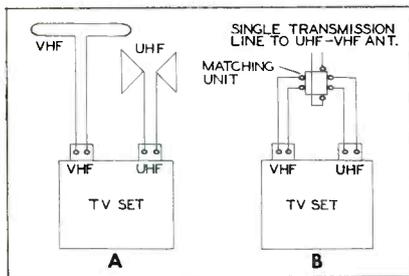


Figure 6. Methods for Connecting Transmission Lines to VHF-UHF Receivers.

already announced matching units in their line. It is probably that such units will be available from several more companies in the near future. We were unable to make operational tests on these units, however we plan to do so as soon as possible and we will pass along our findings.

The second phase of the tests, as applied to the use and operation of UHF converter and receiving systems, was made using portable auxiliary equipment, such as our portable power plant and antenna trailer tower. It was thereby possible to actually observe UHF oper-

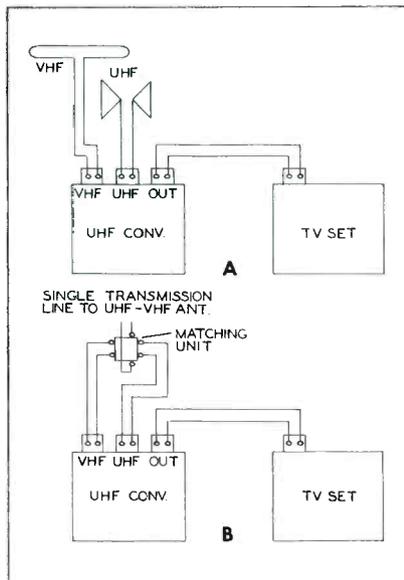


Figure 7. Common or Separate Transmission Lines Connected to Separate UHF Converter and TV Set.

ation at a number of different locations. A receiver with a built-in converter unit was used in the tests, along with a separate two channel

converter unit of the pre-set type. Figure 2 illustrates this test setup. We found that even at 60 miles the signal was strong enough to provide synchronization of the picture but was rather weak as far as contrast was concerned. No deliberate attempt was made to try an elaborate antenna array to improve the reception, but it was felt that through careful selection of the antenna and lead-in, a satisfactory picture might be obtained at this location. This speaks pretty well for the sensitivity of the receiver.

As a tribute to the engineering put into each of the UHF receiving devices tested, which were subjected to abnormal conditions while being transported in the trunk of a car, sometimes in very cold weather, the abuse in no way impaired their performance during the two weeks period. The units proved to be stable, rugged, and simple to operate. Their use in the home should prove highly satisfactory in providing excellent television reception from UHF stations.

MERLE E. CHANEY

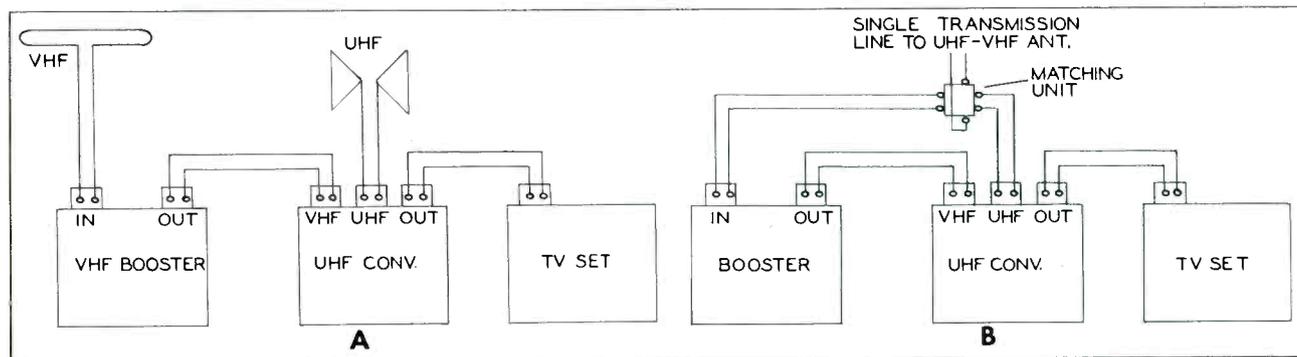


Figure 8. Connections for Common or Separate Transmission Lines to a Combination of Booster, UHF Converter, and Receiver.

UHF ANTENNA (cont'd. from page 25)

of handling the ghost trouble. One further point about the terrain--there was a rise of ground between the test position and the transmitter site. The elevation of this ground was about 25 or 30 feet above the test location.

The first antenna used was a bow-tie with screen reflector (Channel Master, Model 403). At a height of 25 feet, a ghost-free picture could be obtained, but it was necessary to orient the antenna to within 5 degrees of the transmitter direction. Any deviation resulted in the reflected signal from the gas storage tank appearing on the picture in the

form of a ghost. When the antenna was turned so that it pointed toward the storage tank, the reflected signal dominated the sync circuits of the receiver, and the direct signal showed up as a leading ghost on the picture screen.

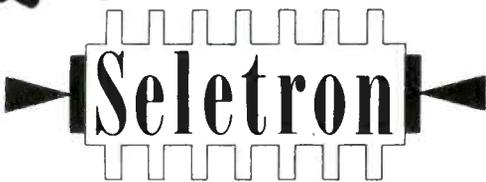
When the height of the antenna was raised to 30 feet, it was found that the angle of rotation, through which a ghost-free picture appeared, was larger. The angle increased with each successive rise in height until at the 45 foot level the picture was clear over a rotational angle of 90 degrees. This signified that the strength of the direct signal, though weak at the 25 foot height because of the ground rise obstruction, increased considerably in comparison

to the strength of the reflected signal as the antenna was raised.

A pair of bow-ties, vertically stacked, with their individual screen reflectors (Walsco, Model 4402) were tried next, and reception quality was checked at various heights. A ghost-free picture could not be obtained at either the 25 foot level or the 45 foot level. However, there were one or two heights in between at which a clear picture did show. This particular antenna seemed, therefore, to perform with medium effectiveness in a ghost-ridden location.

The third antenna given a trial at Position P-2 was the stacked dipoles with screen reflector (Radiart, Model U-4). The picture re-

MILLIONS OF "SAFE CENTER" SELETRON RECTIFIERS
IN USE IN RADIO AND TV!



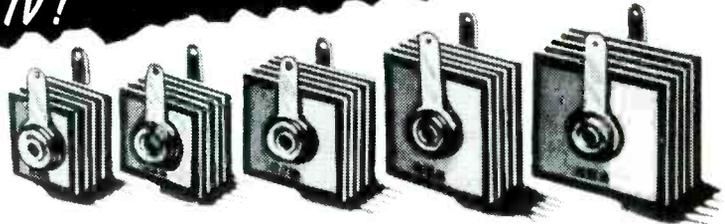
Reg. Trade Mark

SELETRON SILENIUM RECTIFIERS

When you specify SELETRON "Safe Center" Selenium Rectifiers you eliminate arc-over danger, short circuits and heating at the center contact point. Assembly pressure, or pressure applied in mounting the rectifier cannot affect its performance—a SELETRON feature accomplished by deactivating the area of the plate under the contact washer.

The millions of SELETRON Selenium Rectifiers in satisfactory service as original equipment in the products of leading manufacturers are millions of reasons why you can specify SELETRON and be safe!

Consult your local jobber!



MODEL NO.	PLATE SIZE	STACK THICKNESS	MAX. INPUT VOLTAGE R.M.S.	MAX. PEAK INVERSE VOLTAGE	MAX. D.C. OUTPUT CURRENT
1M1	1" sq.	3/8"	25	75	100 MA
8Y1	1/2" sq.	1/8"	130	380	20 MA*
16Y1	1/2" sq.	1/8"	260	760	20 MA*
8J1	1/8" sq.	1/8"	130	380	65 MA
5M4	1" sq.	1/8"	130	380	75 MA
5M1	1" sq.	7/8"	130	380	100 MA
5P1	1 3/8" sq.	7/8"	130	380	150 MA
6P2	1 3/8" sq.	1 1/8"	156	456	150 MA
5R1	1 1/2" x 1 1/4"	7/8"	130	380	200 MA
5Q1	1 1/2" sq.	1 1/8"	130	380	250 MA
6Q1	1 1/2" sq.	1 1/8"	156	456	250 MA
6Q2	1 1/2" sq.	1 3/8"	156	456	250 MA
6Q4 (+)	1 1/2" sq.	1 3/8"	130	380	300 MA
5QS1	1 1/2" x 2"	1 1/8"	130	380	350 MA
6QS2	1 1/2" x 2"	1 1/4"	156	456	350 MA
5S1	2" sq.	1 1/8"	130	380	500 MA
6S2	2" sq.	1 3/8"	156	456	500 MA

* This rectifier is rated at 25 MA when used with a 47 ohm series resistor.
(+) Stud mounted—overall: 2"

SELETRON DIVISION

RADIO RECEPTOR COMPANY, INC.
Since 1922 in Radio and Electronic
 Sales Department: 251 West 19th St., New York 11, N. Y.
 Factory: 84 North 9th St., Brooklyn 11, N. Y.

XCELITE Hand Tools
PREFERRED BY THE EXPERTS

FOCALIZER ADJUSTER
that's
NON-MAGNETIC!

XCELITE BERYLLIUM-COPPER SCREWDRIVERS

- No disturbance to TV image!
- Better fatigue resistance than steel!
- No continual blade regrinding as with fibre and plastic tools!
- 10" shank! Wide tapered blade!

*Why be without it?
Order today!*

XCELITE, INCORPORATED
(Formerly Park Metalware Co., Inc.)
DEPT. Q
ORCHARD PARK, N. Y.

For Originality
LOOK TO XCELITE

A HOT Little BOOSTER
for **HOT Front Ends**

\$24.95
LIST

Videon Jr.

VIDEON JR. won't oscillate with the hot front ends of new sets!

PERFORMANCEWISE—It's tops

PRICewise—It's right . . . and as for customer satisfaction, you cut costly call backs when you install a VIDEON JR.

Write For Descriptive Folder And Name Of Your Distributor

Coming Soon -
The New Videon UHF Converter

ELECTRONIC CORPORATION
222 East Ohio Street · Indianapolis, Indiana

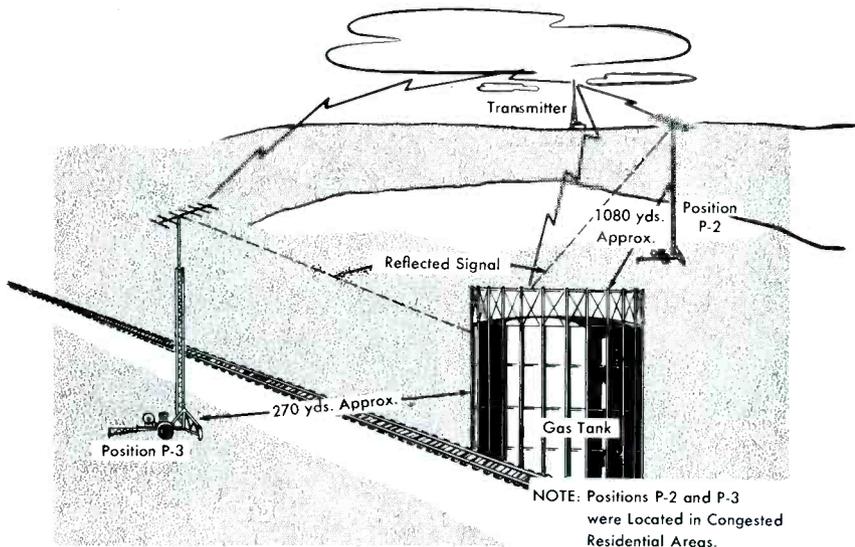


Figure 5. Sketch of the Terrain of Positions P-2 (3 Miles) and P-3 (3-1/2 Miles).

ceived with this antenna style was quite unsatisfactory; the reflected signal could not be eliminated from the picture despite reorientation of the antenna or changes of height up to 45 feet.

A circular folded dipole antenna (Rytel, Model RDO-1) was raised in the air next, and the signal showed a strong reflection present throughout 360 degree rotation of the antenna. Consequently, this antenna type is not recommended for installations where reflections are present.

Our final test at Position P-2 was a check of the clover V-beam antenna (Telrex, Model 100). This antenna was mounted on a mast section (See Figure 6) and put up about 48 feet in the air. It was found that there were three directions in which the antenna could be pointed to receive a ghost-free picture; however, these points were very critical and the least deviation one way or the other brought a ghost pattern on the screen. In view of this, the clover V-beam type of antenna is not very suitable in such an application.

Position P-3 was plagued with a reflected signal coming in at right angles to the direct signal as can be noted in the sketch of Figure 5. A railroad angled past this position only ten or twelve yards away. The bed of the right-of-way was about 12 to 15 feet higher than the average terrain; however, as results proved, the presence of the railroad had no appreciable effect on the signal reception. The gas storage tank, located about 270 yards off to the right of Position P-3 in relation to the direction of the transmitter, was

the principal source of reflected signal.

With the stacked dipoles and screen reflector (Radiart, Model U-4) much better results were obtained at this position than at Position P-2. At a height of 25 feet a ghost-free picture could be maintained over a full 60 degree rotation of the antenna. At a height of 45 feet the orientation of the antenna became more exacting, though a very clean picture could be obtained. Both direct and reflected signals seemed to get stronger with increase in height.

A bow-tie with screen reflector (Channel Master, Model 403) was also checked at this position with very satisfactory results. A good picture with no reflections was received over a wide angle of antenna



Figure 6. The Clover V-Beam (Telrex, Model 100) Being Installed on a Section of Mast.

rotation at both the 25 and 45 foot levels.

The circular folded dipole antenna (Rytel, Model RDO-1) was given a trial at Position P-3. Again this type of antenna indicated less directivity as the ghost signal persisted in the picture regardless of where the antenna was pointed.

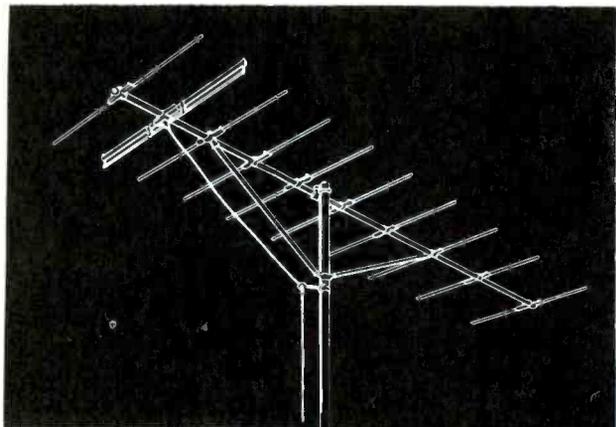
Position P-4 was located approximately 5 miles north of the transmitter. This was at the north edge of South Bend in open, flat terrain. The only obstructions were scattered houses to the south of the test setup. One antenna, a stacked V type (Channel Master, Model 404), was checked at this position. Due to adverse weather conditions, no further tests on other antennas were performed at Position P-4, (5 miles). The results of the one test are shown graphically in Figure 7.

The graph of Figure 7 shows that the signal strength followed a definite pattern with changes in height of the antenna. The strongest signal was received at a height of 24 feet, which means that a normal rooftop installation under these conditions would give satisfactory results. As evidenced by the graph, there would be no advantage in positioning the antenna higher than the 24 foot level.

The picture on the receiver was of good quality with no sign of reflected signals. This was to be expected since there were no high obstructions which would normally cause reflections in the area.

A fifth test location, Position P-5, was established at a distance of approximately eight miles from the transmitter. Of the several tests conducted at this position, only one had a direct bearing on the subject of this report. This was a test using an all channel UHF-VHF antenna which featured a simple V-dipole and reflector as its UHF section (Vee-DX, Model Ultra Q-Tee). The picture qualities of the local UHF signal and of the VHF signals coming in from Chicago, approximately 70 miles away, were checked. The UHF signal was free of snow and very acceptable; the VHF signals were comparable to those obtained on VHF antennas employed in the area.

In summary, we might say that the antenna problems in the primary service area of a UHF transmitting station resolve themselves into two major questions:



10-Element Yagi
Cut to specified channel
(Also Available Stacked)

- ✓ Amazingly Powerful Reception
- ✓ Rugged All-Aluminum Construction
- ✓ Lifetime Factory Warranty

a "TESCO" exclusive

the ROCKETENNA

by T-V PRODUCTS CO.

Complete factory Preassembly features sensational "Quick-as-a-Wink" construction. No Nuts or Bolts to Tighten... rugged rivet assembly prevents damage by wind and storm vibration.

ANOTHER "TESCO" PRODUCT

T-V

Write for New Complete Catalog P

PRODUCTS CO.

152 SANDFORD ST. • B'KLYN, N. Y.



get out ahead in
uhf

THIS NEW BOOK GIVES
YOU THE "KNOW-HOW"

"UHF
Converters"



describes their design... shows you how they work

44 pages
8½ x 11

Covers 21 Converters and Tuners

Cash in on the terrific expansion of TV through new UHF transmission. Be among the first to understand the design, installation and operation of the new UHF converters and tuners. This book describes all the popular converter designs and tells how they work with present VHF sets. Gives you the timely UHF information you want. Covers 21 converters in the following makes:

Arvin	Motorola	Standard Coil
Crosley	RCA	Stromberg
Dumont	Raytheon	Sutco
G. E.	Regency	Sylvania
Mallory	Sarkes-Tarzian	

To stay ahead in TV... to get in on the ground floor as a UHF expert—you'll want this essential, profit-building book. Get a copy today!

ORDER UC-1. **\$100**
"UHF CONVERTERS," Only.....

HOWARD W. SAMS & CO., INC.

Order from your
Parts Jobber,
or write direct to
Howard W. Sams & Co., Inc.
2201 E. 46th St.,
Indianapolis 5, Ind.

DC to AC Converters

Dynamotors

Genemotors

DEPENDABLE... COMPACT... EFFICIENT

Carter Rotary Power

Carter DC to AC Converters, Dynamotors, Genemotors, Magmotors, and Inductor Alternators (inverters) are made in a wide variety of types and capacities adaptable to communications, laboratory, and industrial applications, of many kinds. Widely used in aircraft, marine, and mobile radio, geophysical instruments, laboratory work, ignition, timing and many other uses. Write on your company letterhead for complete Dynamotor and Converter catalogs with specifications and performance charts on the complete line of Carter Rotary Power Supplies.

Recorder Converters

Inductor Alternators

Magmotors

Carter Motor Co.
2651 N. Maplewood Ave., Chicago 47
Sales Offices in Principal Cities

*Trade Mark Registered

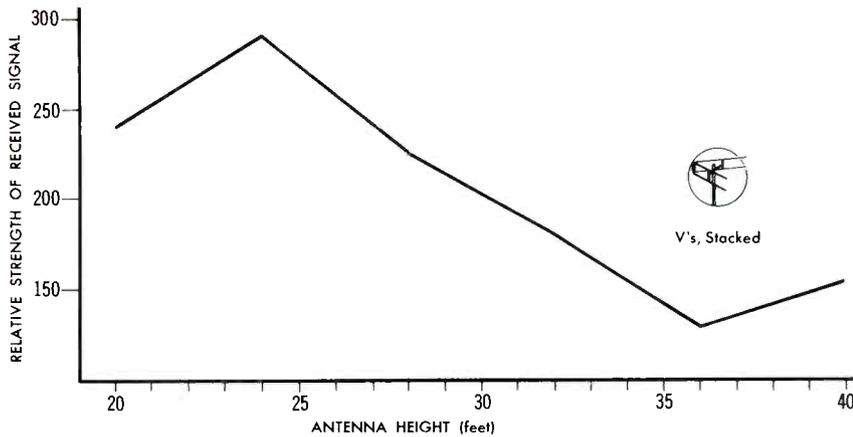


Figure 7. Relative Strength of Received Signal Versus Antenna Height at Position P-4 (5 Miles).

What antenna height will provide strongest and best signal reception?

What antenna type should be used to best combat a ghost problem?

Judging from the outcome of our tests conducted in the primary service area of WSBT-TV in South Bend, it can be stated that antenna height does determine in some measure the quality and strength of the signal received. Also it was found that low antenna heights may frequently provide better reception than the higher ones.

In areas with reflection problems, the antennas which have very good directivity, namely, those having reflecting surfaces or elements which reduce pick-up from the rear

and sides are to be preferred over antennas not having such features. On the other hand, in those locations where ghosts are not troublesome, the less directive types may be used quite satisfactorily.

It may be well to briefly mention at this point that two types of indoor antennas were given trials in the primary service area at South Bend and the results were very unsatisfactory. Snowy and ghost-ridden pictures were obtained with both types. Judging from such results, we are hesitant to recommend indoor antennas for UHF reception.

Chart B shows those antennas which we found particularly suitable for outdoor installations in the primary service area of the UHF television station at South Bend. In

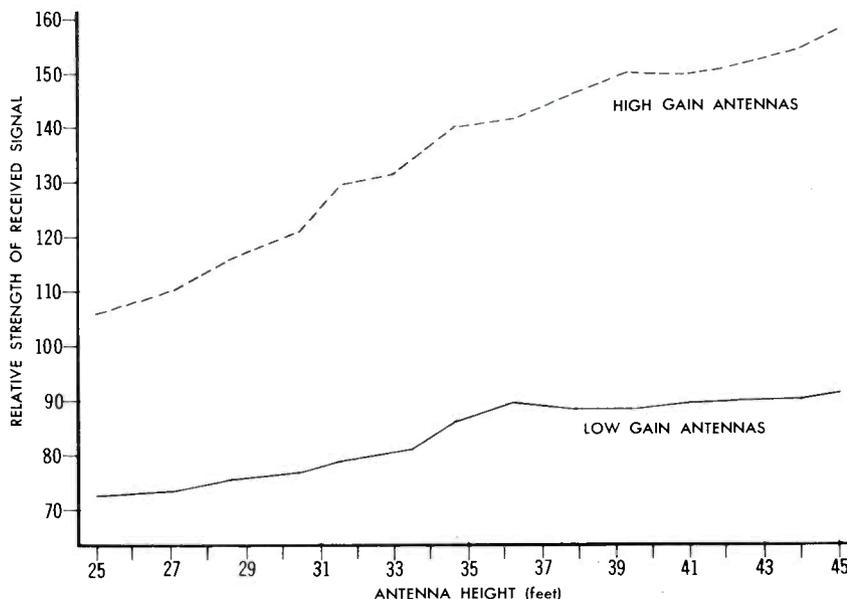


Figure 8. Graph of the Effect of Height on High Gain Antennas and Low Gain Antennas.

those areas where reflections are bothersome, more directive types may be needed, such as the corner reflector or the other antennas having reflector screens of some form or other. Chart B excludes all of the higher gain, and frequently more expensive, types of antennas; even though the use of such antennas in the primary area is perfectly permissible.

Secondary Service Area -

A test position, which we shall designate as Position S-1, was established at a distance of 20 miles from the transmitter site. The position was in open, rural country on a very slight rise of ground. A building was situated in the direction away from the transmitter, but it could not be considered a source of reflections.

A total of twelve different UHF and UHF-VHF antennas were tried at this location so that comparisons could be made. Each antenna was checked at several heights between 25 and 45 feet. Generally speaking, it was found that all the antennas picked up more signal with increasing height. However, one trend was noted and that was that the higher gain antennas showed a more pronounced increase in signal pickup with rise in antenna height than the lower gain antennas. An average was calculated from readings obtained from groups of high and low gain antennas at heights from 25 to 45 feet. The relationship of these averages is shown in Figure 8. From an installer's viewpoint, it would seem, therefore, that it is less practical to install a low gain antenna at a high level for sufficient signal pickup than it is to install a high gain antenna at a medium level.

In all the tests at Position S-1 (20 miles) the picture was very clear and sharp and, for the most part, free of snow. To show the comparative gains of the various antennas, an average gain figure for each was calculated from the data of the tests and the results are shown graphically in Figure 9. The readings obtained from 37 to 45 feet which included the maximum reading for each antenna, were used for these calculations. Two of the antennas in this graph were not tested with the others at this specific position, but have been included because the conditions under which they were tested at a later date made possible a direct comparison.

Walco

REPLACEMENT NEEDLES

BECAUSE YOU'RE IN BUSINESS TO MAKE MONEY!

and you make real money when

you install Walco diamond-tipped replacement needles because your profit runs as high as \$10.00 per needle and more. You do a good turn for your customer, too, because, play for play, he pays less and he preserves his precious records as well. Walco replacement needles cost you as much as 40% less than other brands because Walco manufactures needles. Many leading manufacturers use Walco-made needles as original equipment. You'll be ahead all-ways with Walco.

Walco

TRADE NAME OF

ELECTROVOX CO., INC.

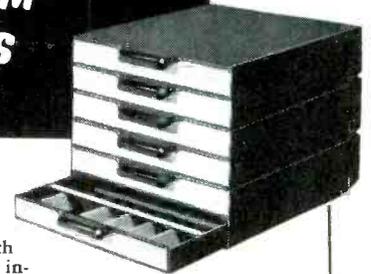
60 FRANKLIN ST., EAST ORANGE, N. J.

SPEED HANDLING OF TINY PARTS

WITH NEW

LITTLE GEM* CABINETS

Ideal for storage of capacitors, condensers, phonograph needles, chokes, nuts, bolts, screws and lock washers.



The Little Gem is a ruggedly-built, all steel two drawer storage unit that measures 11" x 11" x 3 1/4". Each drawer may be divided into as many as 28 instantly adjustable compartments through use of flush-fitting dividers. Sides and bottom are fully enclosed to prevent escape of even the tiniest parts. Front of compartment is curved for easy removal of parts . . . rear has 3/4" overhang to prevent mixing of items when drawer is jerked

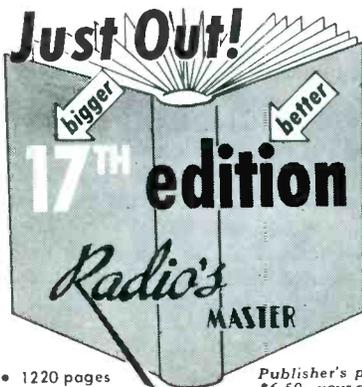
open or slammed shut. Easily visible label holders on every compartment permit quick identification of all parts.

The Little Gems may be used individually, in racks, under counters, or on shelving. See them at your Equipto distributor or write us for free catalog.

*Trade Mark, Patent Pending

Equipto

Division of Aurora Equipment Company
830 Prairie Avenue, Aurora, Illinois
Steel Shelving . . . Parts Bins . . . Drawer Units



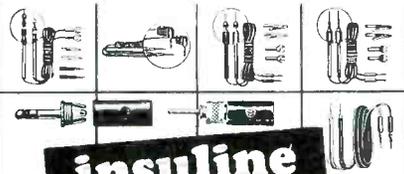
- 1220 pages
 - 80,000 items
 - 8,000 illustrations
 - 8" x 11" - 5 lbs.
- Publisher's price \$6.50—your price through your regular parts distributor \$1.95

The right part when you need it for service

This permanent, hard cover Official Buying Guide of the electronic-TV parts and equipment industry with its comprehensive detailed index, eliminates the need for maintaining files of small catalogs and manufacturers' literature. Radio's Master catalogs 90% of TV and electronic equipment. Not merely part number listings—complete descriptions, specifications and illustrations written and compiled by each manufacturer. Enables you to make comparisons or substitutions right now!



UNITED CATALOG PUBLISHERS, INC.
110 Lafayette St., New York 13



insuline

... world's largest producer of TEST LEADS and PROBES

• INSULINE has been the leading maker of test leads and probes (standard and special types) for 32 years. Over 2000 items . . . including tools, hardware, components, metal goods, antennas, accessories . . . for every electronic requirement. INSULINE jacks, plugs and connectors are used by practically every major manufacturer as standard equipment.

Write Dept. PF for latest catalog illustrating and describing complete line.



insuline

CORPORATION OF AMERICA

INSULINE BUILDING • 36-02 35th AVE.
LONG ISLAND CITY, N. Y.

West Coast Branch and Warehouse:
1335 South Flower Street, Los Angeles, Calif.
Exclusive Canadian Sales Agents:
CANADIAN MARCONI COMPANY, Toronto

AUELS TV SERVICE TELS HOW TO SOLVE TV TROUBLES AND ANSWERS TV QUESTIONS

AUELS TELEVISION SERVICE MANUAL covers T.V. information at your finger ends. Shows good receiver adjustment and How to Get Sharp, Clear Pictures, How to Install Aerials—Avoid Blurs, Smears, Interference and How to Test. Explains Color Systems and Methods of Conversion. IT PAYS TO KNOW! Over 380 PAGES & 225 ILLUSTRATIONS explaining operating principles of Modern Television Receivers.

Just Out!



1001 FACTS 19 CHAPTERS

Placement of Television Receivers—Receiver Controls, Test Patterns & Adjustments—Television Interference—Interference Traps—Television Antennas & Transmission Lines—Master Antenna Systems—Antenna Installation Procedure—Television Broadcasting—Television Receiver Fundamentals—Circuit Description of Typical Receiver—Television Picture Tubes—Projection Type Receivers—Television Testing Instruments—Television Servicing—Trouble Television Terms.

\$2 POST PAID

Shooting—Color Television—Television Terms.
7 DAYS FREE TRIAL
GET THIS PRACTICAL ASSISTANCE FOR YOURSELF

AUELS, Publishers, 49 W. 23rd St., N.Y.
Mail me postpaid for 7 Days examination.
AUELS TELEVISION SERVICE MANUAL (Price \$2).
If O.K. I will mail you \$2, otherwise I will return book.

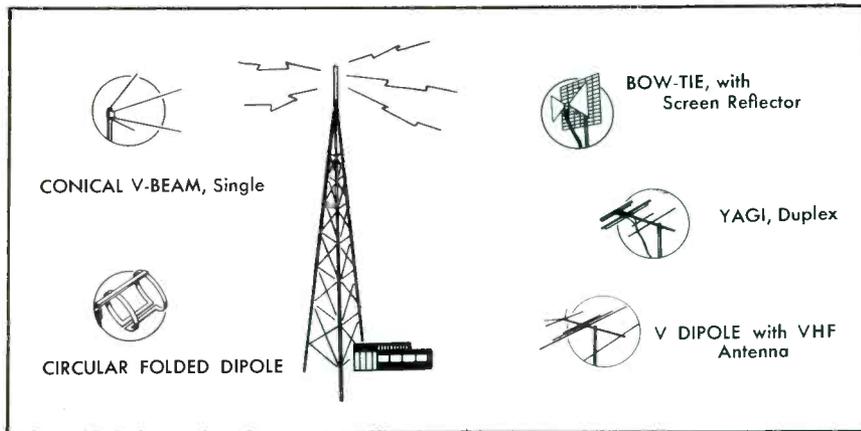


Chart B.

Antenna Recommended for the Primary Service Area, (0-15 miles).

NOTE: In Areas Having Reflection Problems, See Text for Additional Recommendations.

The rhombic (Tricraft, Model U-1) and the 12 element Yagi (Vee-DX, Model LLJU-28-39) were both high gain antennas. The rhombic was extremely directive. The rotator which was used with the antenna had a speed of approximately one revolution per minute, and the orientation of the antenna for maximum signal reception called for considerable care and precision in manipulating the rotator control. As can be seen in Figure 9, the rhombic matches the 12 element Yagi in being the most sensitive of the antennas tested. Again, it must be kept in mind that all these antenna checks were limited to only one channel out of the group of 70 UHF channels. Their operation on Channel 34 is no positive guarantee of similar operation over the whole range of channels. Still, the results which were obtained are substantiated in great part by theoretical considerations. For example, the rhombic has long been placed high in all gain com-

parisons, and it also has been noted for the long narrow lobe in its horizontal pattern, the feature which marks it as being a highly directional antenna.

The corner reflector (Walsco, Model 4450) is shown in Figure 10 as it was being mounted on the mast in preparation for its test. Its gain characteristic on Channel 34 came close to that of the 12 element Yagi and the rhombic, though its directivity was not quite as critical.

The order of the other antennas as far as their respective gains were concerned is shown in the bar graph of Figure 9. The fact that some of the Yagi antennas assumed positions near the bottom of the group may or may not be significant since it is not definitely known whether the particular antennas involved were cut specifically for Channel 34 or whether they may have been designed for a broad group of

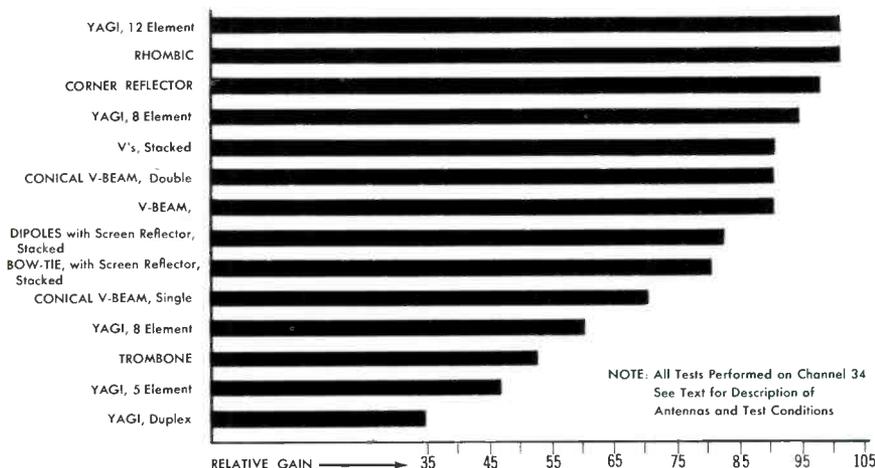


Figure 9. A Bar Graph Showing the Comparative Gains of the Various Antennas Tested at Position S-1 (20 Miles).

channels. If the latter case is true, gain probably suffered a good deal in achieving the added bandwidth.

Positions S-2, S-3, F-1, and F-2 should be discussed as a group. The reason is that tests at these positions were performed with one objective in mind. This objective was to set a course going north from the transmitter to check the signal strength at the 15, 20, 25, and 30 mile points. Position S-2 was located at the 15 mile limit; S-3 at the 20 mile limit; F-1, which marks the beginning of the fringe area, at the 25 mile limit; and F-2 at the 30 mile limit.

The type of antenna used at these four positions was the stacked bow-tie with screen reflector (Walsco, model 4402). Only this one antenna was used because it was desired to compare the signals received at all four positions. The test equipment remained the same in all tests and the results of the tests are shown graphically in Figure 11.

As is shown on the graph, the signal strength was, on the average, proportional to the height of the antenna. As the height was increased the signal strength increased for all four positions. Consequently, at maximum height of the antenna the signal strength was at maximum.

In comparing the results of the four positions it is seen that the strongest signal was received at test position S-3, (20 miles). The reason it was much higher than that received at Position S-2, (15 miles) was because of the difference in terrain at these two locations. The 15 mile location was at the lowest point in Niles, Michigan, near a two story

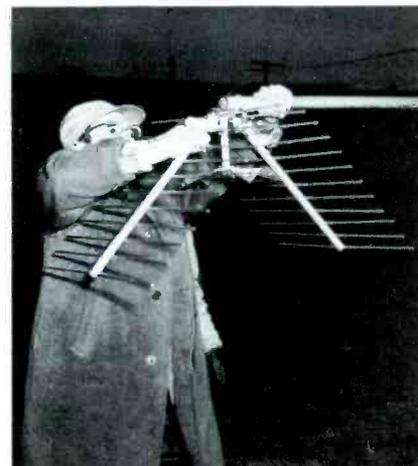


Figure 10. The Corner Reflector Being Mounted on the Mast in Preparation for its Test.

NOW!

TEST, SERVICE 12v. AUTO RADIOS



New Electro DC Power Supply Model C-12

0-16 Volts for 0-8
Amperes Continuous Output. Up
to 12 Amperes
Intermittently.



Ripple Only 3% at Full Load

Completely variable output makes it possible to test equipment under any voltage input condition. Provides filtered adjustable DC voltage for testing and servicing 12 volt and 6 volt auto radios from AC lines. Operates electronic equipment used on trucks, tanks and other mobile units and low voltage devices. Utilizes Superior Powerstat Voltage Control (Model 10) for extremely fine voltage adjustments.

Another Better-Than-Rated EPL Product!

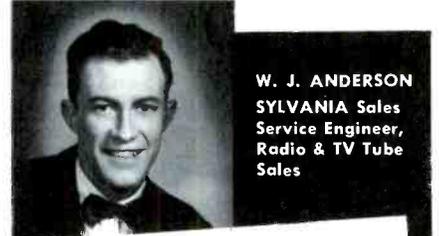
Write for Complete Information

ELECTRO PRODUCTS LABORATORIES

4501-Fc North Ravenswood Ave., Chicago 40, Ill.

CANADA: ATLAS RADIO CORP., LTD., Toronto, Ont.

what 25,000 Servicemen told Bill Anderson (SYLVANIA Sales Service Engineer) about PHOTOFAC...



W. J. ANDERSON
SYLVANIA Sales
Service Engineer,
Radio & TV Tube
Sales

SYLVANIA ELECTRIC PRODUCTS INC.

"During the years of 1951 and 1952, Robert Grow and I have talked to approximately 25,000 servicemen located throughout the United States. We have an excellent idea concerning the response of these men to your PHOTOFAC Service and to your publications. In talking to your servicemen, I have heard many fine compliments on the excellent job your organization is doing. Such comments as these are typical:

1. Very detailed and easy to read instructions on any set, as well as pictures and schematics.
2. The theory of operation of various stages and components is helpful, such as found in the PHOTOFAC INDEX.
3. The immense amount of useful information presented in such a short time after release of the manufacturer.
4. Pictures of the wave forms, as well as voltage measurements saves time and increases profit to the servicemen.

These and many more are typical of the comments from the servicemen. This may be of interest to you and your staff as you continue to lead the field in technical publications for the radio and television servicemen."

Sylvania Electric Products Inc.



NEW! JACKSON

SELENIUM RECTIFIER TESTER

- Tests all types 20 to 650 ma - 25 to 300 VAC.
- Gives positive indication - GOOD or BAD - on 3" meter. Shows voltage drop across rectifier under load.
- Novel system gives correct setting, even if rectifier rating is unknown.
- Small, compact - 7" x 3 1/4" x 4 1/4". Has permanent, "loss-proof" color-coded test leads.
- Operates on 110-125 VAC. "Line Adjust" for accurate testing.
- Model 710 Dealer Net Price only \$29.50. See it at your distributor's.

"SERVICE-ENGINEERED" TEST EQUIPMENT

JACKSON

ELECTRICAL INSTRUMENT CO.
DAYTON 2, OHIO

IN CANADA:
CANADIAN MARCONI CO.

NOW! GET THE PROOF FOR YOURSELF!

FREE

We'll send you a Free Photofact Folder on any receiver listed in "PF Index & Technical Digest."

Learn for yourself—at our expense—how PHOTOFAC pays for itself by earning bigger repair profits for you! Select any Folder from the PF Index (if you haven't an index, get a copy from your distributor). When you write us for your Free Folder, be sure to state Photofact Set and Folder Number as shown in the Index. Get your Free Folder now. Examine, use, compare—see why you can't afford to be without PHOTOFAC!

HOWARD W. SAMS & CO., INC.
2203 E. 46th St., Indianapolis 5, Ind.

HOWARD W. SAMS & CO., INC.

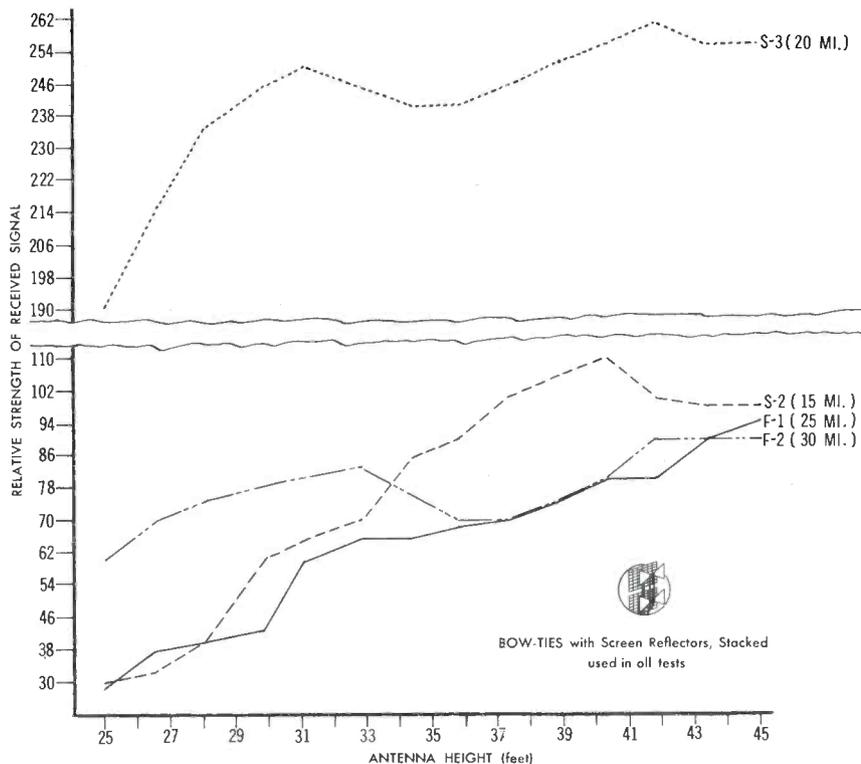


Figure 11. Graph Showing the Results Received Using the Stacked Bow-Tie with Screen Reflector at Positions S-2 (15 Miles), S-3 (20 Miles), F-1 (25 Miles), and F-2 (30 Miles).

warehouse. The warehouse was in direct line with the transmitting tower. Moreover, the elevation of Niles is considerably lower than that of the transmitting antenna; it is only 743 feet above sea level while the elevation of the transmitting antenna is 1350 feet above sea level. Figure 12 is a photograph taken at the Niles test position. On the other hand, the terrain at test position S-3 was the opposite of that at Position S-2. Position S-3, (20 miles) was

located in a rural district on a hill higher than the average terrain. (See photograph of test position S-3 in Figure 13.) Although this position was five miles farther north than Position S-2, the differences in the average terrain produced a great difference in the signal strength received at these positions.

In comparing Positions F-1 and F-2, (25 and 30 miles respectively) it is seen that, on the average,

the signal strength at Position F-2, (30 miles) was slightly higher than that received at Position F-1, (25 miles). Up to a height of 37 feet the signal at F-2 (30 miles) was considerably higher. At heights above 37 feet the signal strength for both positions remained almost the same. Examination of the terrain at these two positions could also be the basis of an explanation of these results. The location of Position F-1 (25 miles) was in a rural district but with a 20 to 40 foot rise to the south of it. The location of Position F-2 (30 miles) was also in a rural district but the terrain sloped downward toward the direction of South Bend, which probably placed Position F-2 (30 miles) a higher elevation than Position F-1 (25 miles). Since Positions F-1 and F-2 were located in the fringe area the readings obtained were very low. The type of antenna used for these tests was not sensitive enough for operation in the fringe area. If a higher gain antenna type, such as the rhombic, 8 or 12 element Yagi, or corner reflector had been used, greater readings would probably have been realized.

The picture at Position S-2 (15 miles) was considered satisfactory with a small amount of snow, while the picture quality at Position S-3 (20 miles) was very clean--almost free of snow. This was to be expected because of the difference of signal strength as shown on the graph of Figure 11.

The pictures at Positions F-1 and F-2 (25 and 30 mile points respectively) were found to contain a considerable amount of snow and at times the picture became unstable. This was to be expected since the signal strength at both of these posi-

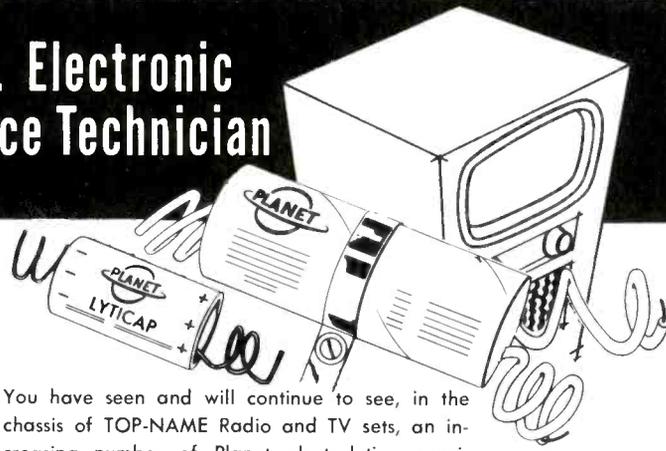


Figure 12. Photograph Taken at the Niles Test Position S-2 (15 Miles) showing the Terrain at this Location.



Figure 13. Photograph Taken at Test Position S-3 (20 Miles), Showing the Terrain at this Location.

Mr. Electronic Service Technician



You have seen and will continue to see, in the chassis of TOP-NAME Radio and TV sets, an increasing number of Planet electrolytic capacitors — conspicuous because of their shiny red cardboard jackets. They are in those quality sets because components engineers have proven for themselves that PLANET condensers are "ENGINEERED FOR QUALITY".

You can take advantage of their findings by purchasing from your distributor Planet universal replacement types of the same high standard of quality. Ask for PLANET by name.

"ENGINEERED FOR QUALITY"

1 year
service
guarantee



Write now for
latest FREE catalog
6-A

PLANET MANUFACTURING CORPORATION

225 BELLEVILLE AVENUE
BLOOMFIELD, N. J.

ELECTRONIC HARDWARE IN HINGED COVER PLASTIC BOXES



LIST
50c each

It's the New



BUY ALL YOUR RADIO-TV HARDWARE — 240 different items—in these sturdy, reusable *Hinged Cover* plastic boxes. Make your work bench neater, handier. Look for . . . insist upon G-C hardware in the Hinged Cover Line!

**BUY WHERE YOU SEE THE
G-C HARDWARE DISPLAY . . .
IN HINGED COVER BOXES!**

Dept. A

GENERAL CEMENT MFG. CO.
903 Taylor Ave. Rockford, Illinois



RAM COMPLETES THE SWEEP
NEW VERTICAL COMPONENTS

**Now the most complete
Sweep Replacement Line.**

Simplify your replacement problems with the RAM combination of vertical components, horizontal output transformers, deflection yokes, width and linearity coils. RAM, as original manufacturers, assures you the highest quality and performance standards.

RAM ELECTRONICS • IRVINGTON, N. Y.



For Better SERVICING



RADIO-ELECTRONICS

ON SALE AT PARTS DISTRIBUTORS
SUBSCRIPTION RATES

1 Year \$3.50 2 Years \$6.00 3 Years \$8.00

RADIO-ELECTRONICS Dept. S.
25 West Broadway New York 7, N. Y.

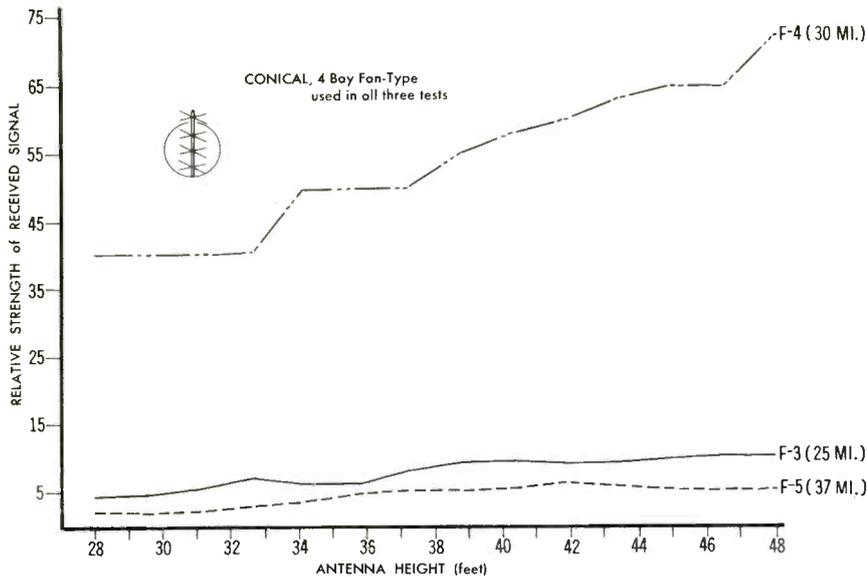


Figure 14. Graph of the Results Obtained Using the 4-Bay Fan-Type Conical at Positions F-3 (25 Miles), F-4 (30 Miles), and F-5 (37 Miles).

tions was weak and a high gain antenna was not used.

At Position F-2 (30 miles) a test was made with an antenna that had been cut for a channel other than Channel 34. A 5 element Yagi, which is not listed in Chart A, was selected for this test. Upon installing this antenna and orienting it toward the transmitting tower, a very weak signal was received. By using the rotator to reverse the orientation of the antenna, it was found that a much stronger signal was obtained. That is, the best reception was received when the antenna was picking up the signal from the back side. The signal strength was practically tripled when the antenna was in this position. This phenomenon has been mention-

ed here so that, should it occur, its probable cause may be known.

To sum up briefly the important features of television reception in the secondary service area surrounding a UHF transmitting station, we found that the antenna installation problems are essentially the same as those encountered with VHF service. There seems to be no problem with unusual vertical field strength distribution. Also the problem of reflected signals does not appear to be as bad at this distance from the station as it is closer in. In the event the latter problem is encountered, however, the best solution would be the use of a highly directional antenna such as a rhombic, a Yagi, or a corner reflector. Another

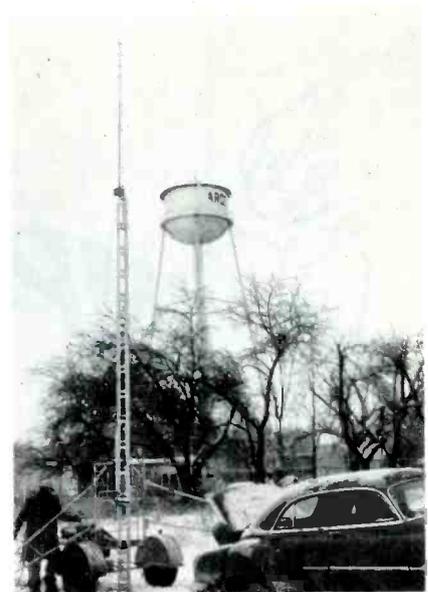


Figure 15. Photograph of the Test Setup at Position F-3 (Argos) Showing the Town's Water Tower.

point to remember is the great effect of terrain on the UHF signal; low elevations will generally require taller masts and higher gain antennas. However, in ordinary circumstances, acceptable reception in the secondary service area will be achieved by using one of the medium gain antennas in Chart C.

Fringe Area -

A total of 9 test positions were established in the fringe area. Two of these positions, F-1 and F-2, were discussed in the previous section. The fringe area, as shown in Figure 3, is the area beginning at the 25 mile limit.

Positions F-3, F-4, and F-5 are to be discussed as a group be-

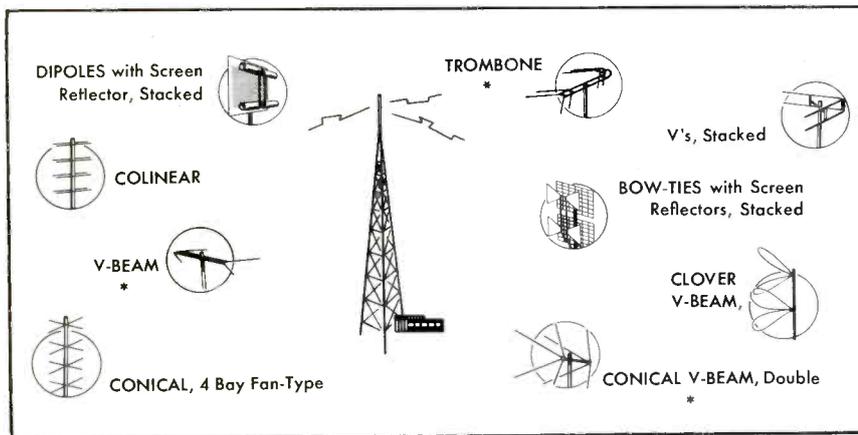


Chart C. Antennas Recommended for the Secondary Service Area, (15-25 miles).

NOTE: In Areas Having Reflection Problems or Abnormally Low Signal Level, See Text for Additional Recommendations.

*May be Stacked for Additional Gain.



Figure 16. Photograph of the 12-Element Yagi being Prepared for Installation on the Tower.



IMPS are TOPS!

IMPS ARE REALLY RUGGED!

The tough thermo-setting plastic will take an astounding amount of abuse —yet IMPS will still look and perform like new!



IMPS WON'T FREEZE OR MELT!

They'll operate faithfully in temperatures ranging from -40°C . to $+100^{\circ}\text{C}$. (212°F .)—and that's the boiling point of water!



IMPS ARE MOISTURE-PROOF!

No moisture can get through the varnished plastic case, or even through the lead anchor points.



IMP LEADS CAN BEND AND BEND!

Tinned leads that are really securely anchored—you'll be amazed at how much punishment they'll take without breaking!



All over the country service-engineers are praising the newest and finest molded tubular paper capacitor—the Pyramid IMP!

IMPS are available in all popular ratings in 200, 400 and 600 volt ranges. See your local distributor.



For free, attractive catalog on IMPS, write Dept. P 2

PYRAMID ELECTRIC COMPANY

1445 HUDSON BOULEVARD • NORTH BERGEN, NEW JERSEY

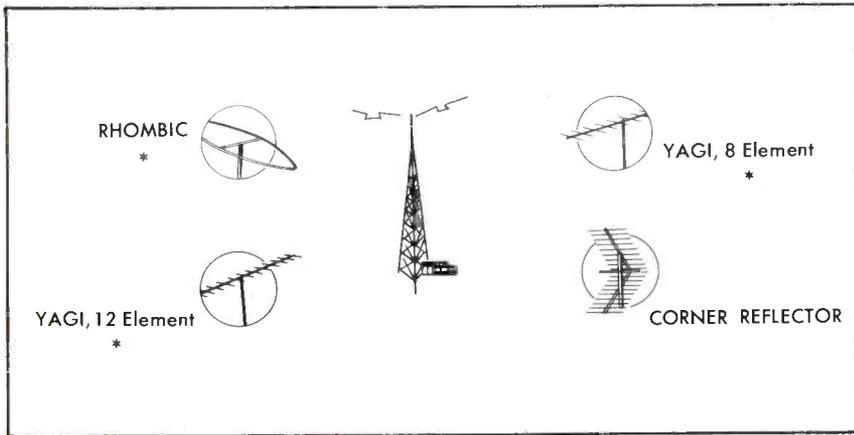


Chart D.
Antennas Recommended for the Fringe Area (beyond 25 miles).

*May be Stacked for Additional Gain.

cause at these three different positions the same type of antenna was used. Position F-3 was located just past the 25 mile limit; F-4 at the 30 mile limit; and F-5 seven miles beyond Position F-4.

The type of antenna used in all three tests was the 4 bay fan-type conical (Taco, Catalogue #3005), and the whole procedure was rather closely patterned after the excursion north of Niles. The graph of Figure 14 shows the results of the tests.

A situation similar to the one at Niles arose at Position F-3; which was in the town of Argos, Indiana, about 25 miles from the transmitter. The readings of signal strength obtained at Position F-3

(25 miles) were abnormally low, so much so that we suspected faulty test equipment. Another possibility was that the town's water tower, located about 500 feet from the test position (See Figure 15), was affecting the signal. Some idea of how low the signal was can be gained from examination of the graph in Figure 14 and comparing the signal at F-3 (25 miles) with the signal at Position F-4 (30 miles), five miles further away from the transmitter. The strength at F-4 was six times that at F-3.

To relieve our suspicions about Argos, we returned a week later and set up our equipment about one-half mile from our former Position F-3 (25 miles). We were away

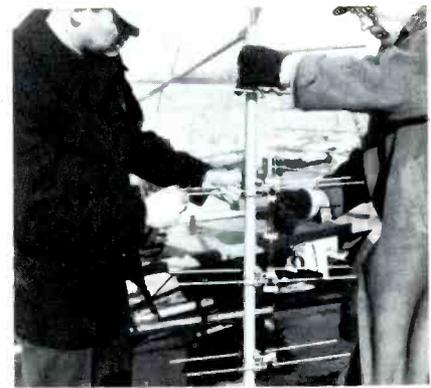


Figure 18. Photograph Showing the Colinear Antenna Being Attached to a Section of Mast.

from the water tower but still within the town's limits. Here we checked a 12 element Yagi (Vee-DX, Model LLJU-28-39), a corner reflector (Walsco, Model 4450), and a clover V-beam (Telrex, Model 100). Figure 16 shows the 12 element Yagi being prepared for installation on the tower. Each one of these antennas performed so much below expectations that we were obliged to conclude that Argos was definitely a very weak signal area. Whether it was due to elevation differences or to other factors is unknown. We can say that normally at 25 miles from the transmitter a medium gain antenna would be very satisfactory. However, in areas such as our Position F-3 (25 miles) at Argos, a high gain antenna would be needed for best reception.

At Position F-5 (37 miles), located in the outskirts of a small city, a number of tests were made using three antennas other than the 4 bay fan-type conical (Taco, Catalogue #3005). These other antennas were the colinear (Vee-DX, Model CAU), the duplex Yagi (Telrex, Model 300), and an 8 element Yagi (Vee-DX Model LJU). The results of these tests are shown in the graph of Figure 17.

The colinear and the 8 element Yagi provided satisfactory reception when they were raised to the maximum height of 45 feet. The 4 bay stacked conical and the duplex Yagi failed to perform well enough to merit recommendation for use at this distance from the transmitter.

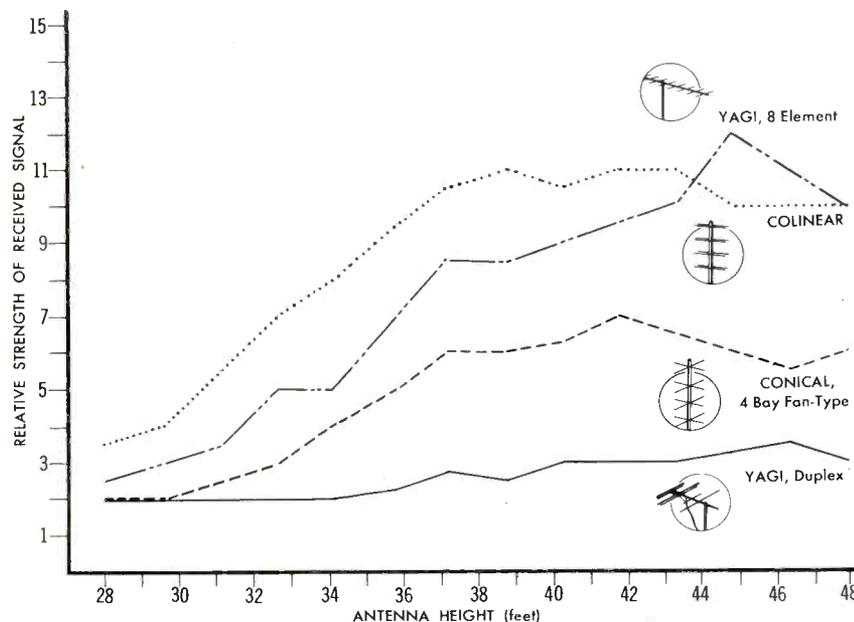


Figure 17. Graph of the Results Obtained at Test Positions F-5 (37 Miles) Using Four Different Types of Antennas.

Subsequent to this series of tests, more investigations into the quality of reception of UHF signals in the fringe areas were undertaken. One test position was established at

More Satisfied
CUSTOMERS



with the
**NEW
CONRAC**

List
\$1.50

Tuner-Kleen'r

Over 30,000 installed in the first 30 days. The new Conrac "Tuner-Kleen'r" is easily snapped into position in all standard tuners to perpetually clean all the stationary and revolving contact points for clearer television reception. Every turn of the tuner puts the Conrac "Tuner-Kleen'r" to work. Put it to work for you for extra profits and more and more satisfied customers. SEE YOUR PARTS JOBBER TODAY!

CONRAC, INC. SINCE 1939
GLENORA, CALIFORNIA



EMC MODEL 206
Mutual Conductance
Tube Tester

- Uses lever type switches
- Checks mutual conductance on calibrated microhmo scale • Detects both shorted and open elements
- Tests all tubes from .75 v to 117 filament volts • Built-in roll chart • 4 1/2" meter.

Model 206P \$83.50

MODEL 204
Tube-Battery-Ohm
Capacity Tester

- Tests all tubes including Noval and sub-miniature
- Tests resistance to 4 megohms • Tests condensers from .01 to 1 mfd. • Tests all batteries under rated load.

Model 204 (loak case) . . . \$55.90

Write Dept't. PF-3 for latest FREE catalog.



a distance of 60 miles from the transmitter. This location we shall call F-6. The country surrounding Position F-6 (60 miles) was open and almost flat. The antenna which was selected for this check was a colinear antenna (Vee-DX, Model CAU). Figure 18 shows this antenna being attached to a section of mast preparatory to raising it in the air.

A weak tone signal and a barely perceptible picture were all that could be received even with the antenna at the maximum height of 45 feet. However, since we were using an antenna of only medium sensitivity, we believe that had we stacked a pair of strictly high gain antennas and used them at this 60 mile distance it would have been possible to receive a fairly acceptable picture.

Positions F-7 and F-8 were set up at 43 and 32 mile distances respectively from the transmitter. Again the colinear antenna was used in each of these tests. At F-7 (43 miles) the picture was discernible and fairly stable but contained considerable snow.

Finally Position F-9 was established in a rural area at a distance of some 27 miles from the transmitter site and reception was found to be very acceptable. An 8 element Yagi antenna (Vee-DX, Model LJU) was given a trial at this position and performed very well. The height of the antenna above ground had surprisingly little effect on the signal reception. By holding the mast in the hand it was possible to get a picture with the Yagi as low as one foot from the ground. As the antenna was raised, a sharp increase in signal strength occurred at the 5 foot level and the strength continued to rise steadily up to the 12 foot level which was the limit of our reach. The orientation of the antenna was not as critical as might be expected. It could be rotated for approximately 30 degrees and still provide a very acceptable picture.

In summarizing the results of our research in the fringe area of a UHF television station, we might say that 60 miles is about the limit for usable signal reception. This figure of 60 miles is, of course, based on our tests with a television station which was transmitting with an ERP (effective radiated power) of 17.5 kilowatts. In the case of a station with greater power than this, proportionately farther distances would probably be covered.

The type of antennas recommended for use in the fringe area

(See Chart D) are the ones that are considered high gain antennas. The antennas in this class are the 12 element Yagi, the 8 element Yagi, the rhombic, and the corner reflector. However, in the area just beyond the 25 mile limit a few of the antennas recommended for the secondary service area could be used. Some of these types would be the V-beam, the double conical V-beam, the 4 bay fan-type conical, and the colinear. Under conditions of undesirable terrain, where the signal strength is low, the higher gain antennas should be employed.

In the area beyond 40 miles, the high gain antennas are definitely recommended. In fact, stacking of the high gain antennas is recommended at this distance. By stacking antennas and by making the installations at the maximum height possible, an acceptable picture should be received at distances up to 60 miles.

Installation Problems in General -

Up to this point in the report, little has been said about the problems presented by more than one station in an area or by combined UHF-VHF service in an area. All antenna installations should be made with a view to the future. If, for



"Mrs. O'Toole, may I have that kit of JENSEN NEEDLES on the chair, please?"

example, an area has only one UHF station on the air but one or more additional channels are in prospect, the receiving antenna should be selected with those facts in mind. It should have broad frequency response and sufficient gain to bring in the farthest station, and it should have a provision for rotating its directional response pattern to receive every station, including the proposed ones.

In an area which has had some VHF fringe service and now is in the primary service ring of a new UHF station, there are two general classes of installations. One is the new installation where the customer

has no outdoor antenna of any kind. The preferred antenna for this installation would be an all-channel (2-83) antenna, one which provides high gain for the distant VHF stations and at least low to medium gain for the local UHF station. Also some means of antenna rotation is essential.

The second class of installation is one of converting from VHF reception alone to combined UHF-VHF reception. The customer may be able to receive a satisfactory UHF signal by using his VHF antenna, particularly if he has a rotator. Beyond the UHF primary service area (0-15 miles), however,

this will not be possible as a rule. If a satisfactory picture cannot be obtained with the VHF antenna, mounting a separate UHF antenna part way up the mast will often serve very well.

It is hoped that this report has added some measure to the growing fund of information that is developing out of the new UHF branch of television communications. More information will become available to the service industry as the field expands; and the subject of antennas will come in for a large share of this coverage.

GLEN E. SLUTZ
C. P. OLIPHANT

UHF Lead-ins (cont'd from page 29)

scribed transmission lines is very similar to that experienced with VHF installations. The main difference is the spacing considerations for UHF installations.

In any installation procedure, the first step is the acquisition of all of the components and accessories necessary to complete the job. Assuming that the antenna and the lead-in selection has been made, it must then be decided what accessory items are required. For this discussion we are particularly concerned with the type of insulators which are best suited to hold the transmission line so that a minimum loss is experienced.

Many reports have indicated that a standoff insulator providing maximum spacing between the lead-in and building must be used. In order to obtain factual data, we performed several tests during our field survey using various lengths of standoff insulators. This was accomplished by mounting complete sets of 3", 5" and 7" insulators on the three corners of the antenna tower. Figure 2 shows these insulators so mounted. The tests were then performed in the following manner.

A position was selected where the signal strength was rather low, so that any attenuation caused by the proximity of the lead-in to the tower would be more pronounced. The test position selected was 25 miles from the transmitter. The first step was to obtain a reading with the lead-in held in free space, that is, not in proximity to the tower or ground at any point. This figure was then considered to be a result of minimum attenuation or, in effect, an ideal installation. The



Figure 3. Set-up for Making Standoff Insulator Test.

next steps in this particular test were performed by taking readings with the transmission line held by the different length standoff insulators. Figure 3 shows the antenna, tower and lead-in during one of these tests. The line on the right of the tower is the lead-in properly positioned in the insulators. The line on the left of the tower is the rotator control cable and has no bearing on the tests. The transmission line was held in the insulators for only 15' and since in some applications a longer lead-in may be required, the effects will be even greater than those sighted in our tests.

During the particular test shown in Figure 4, a relative reading of 12 was obtained with the lead-in held in free space. After inserting the lead-in in the set of 7" standoff insulators, a reading of 11.5 was obtained. With the lead-in in either the 5" or 3" sets of insulators, a reading of 10.5 was obtained. This is a reduction of 12-1/2%. It might be well to point out that the triangular construction



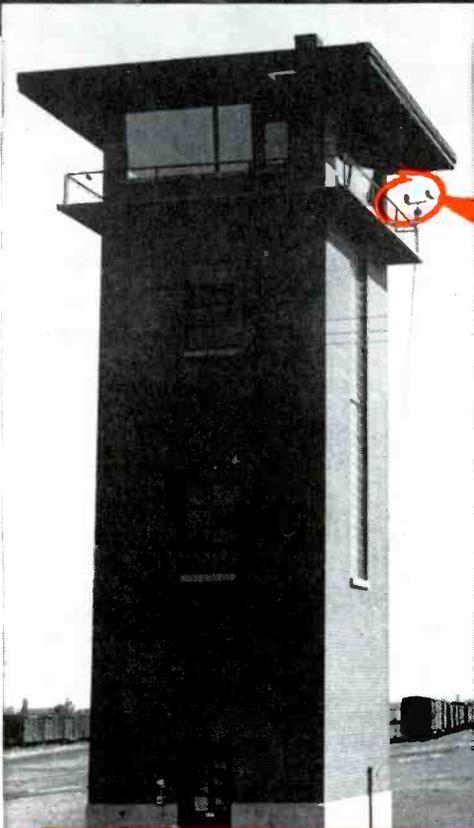
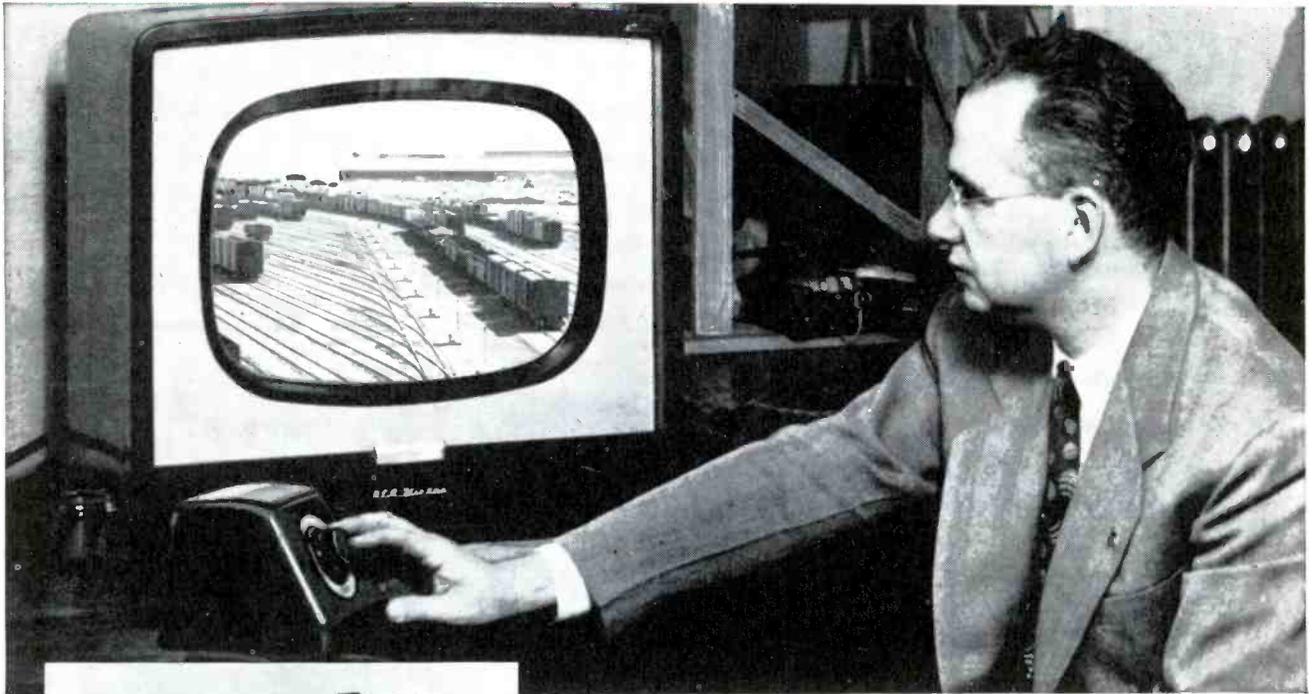
Figure 4. Installing Tubular Lead-in for Testing Purposes.

of the tower produces a less noticeable effect than would be experienced from a flat wall. Thus, it can be expected that even greater attenuation will be experienced in the actual installation. This series of tests showed conclusively that the 7" insulators are most desirable for UHF installations. They should be used whenever possible.

Now let us consider the differences in handling the tubular type line as compared to the flat twin-lead usually associated with VHF installations. The first thing which was noticed was the rigid characteristics of this type of line.

Our field crew had no previous experience in handling this type of lead-in. Our first impression concerned the difficulty of uncoiling the line, due to its greater stiffness over the flat line. Figure 4 shows the field crew at a test position in the process of setting up for a test using a tubular twin-lead line. Note that the lead-in is in the form of a corkscrew, caused by the inability to keep the line straight. It is well

ACCURACY, DEPENDABILITY, ALL-WEATHER OPERATION ..ALLIANCE TENNA-ROTOR VITAL KEY IN RAILROAD TV



Yardmaster now "watches" cars from desk as **ALLIANCE TENNA-ROTOR** turns TV camera!

Alliance TENNA-ROTOR is "working on the railroad!"

Railroad yardmasters in the Baltimore & Ohio Chicago yards now speed their work. They use television to direct freight cars over the maze of switches and tracks. Small TV cameras mounted on Alliance TENNA-ROTORS rotate to scan any section of the yard. Yardmasters operate the control and observe the yard movements on the TV monitor screen, right at their desks!

Hundreds of thousands of TV viewers rely on Alliance TENNA-ROTOR's accuracy

New UHF stations are highly directional! Channels are changing on many stations . . . this makes many 'stay-put', single channel antennas obsolete! For accurate "on-the-beam" reception . . . UHF and VHF, Alliance Tenna-Rotor is the number one TV accessory!

Advertised on 60 TV stations. It pays to push the line that's pre-sold!



ALLIANCE MANUFACTURING CO. • ALLIANCE, OHIO

alliance
TENNA • ROTOR

TELEVISION ANTENNA ROTATOR

...sold the **MOST** because
it's seen the **MOST!**

CHART A - UHF LEAD-IN RECOMMENDATIONS			
	ADVANTAGES	DISADVANTAGES	RECOMMENDED APPLICATIONS
Punched flat twin-lead	Only moderate losses	High losses when wet	Indoor runs
	Very flexible	Affected by dirt deposits	Installations not subjected to moisture and dirt
	Insulators readily available		Installations requiring only a few feet of external lead-in
	No impedance matching problem		
Tubular type twin-lead	Only moderate losses	Quite stiff - especially when cold	All outdoor installations (other than exceptionally long runs in fringe areas where losses must be kept to a minimum)
	Small change in attenuation when wet	Tendency of wires to break at terminals if side strain is placed on line	
	Not greatly affected by dirt deposits		
	Does not flutter in breeze	Line must be sealed at end	
	Easily cleaned	Requires large hold at feed-through point	
Open-wire line	No impedance matching problem		
	Very low losses	Difficult to mount	Installations where losses in the line are of prime importance, particularly if a long run is required.
	Hardly affected by weather conditions	Requires special handling to prevent change in spacing Impedance matching problem with types other than nominal 300 ohm rating	

to point out at this time, however, that many of our tests were performed with the temperature at rather low levels. This made the line even more unmanageable, making it evident that the line should be kept, whenever possible, in a warm place just prior to installation. In one instance, upon completion of a test, the line was tossed aside on the ground and it coiled itself into a spool of almost identical size to that in which it had been stored. This illustrates how unmanageable the line can be when cold. When uncoiling tubular lead-in, it is recommended that the line be rolled off the spool and not slipped off the end of the spool. The latter usually results in twisting of the line, making it even more difficult to handle.

Another difficulty which was experienced was the breaking of the wire at the end of the lead-in. This was brought about by the fact that any side motion of the lead-in placed so much strain on the wires that they would break.

The stiffness of the line is a very important consideration when making installations using a rotator. A much larger loop around the rotator must be used with this type of line than is necessary with the

conventional flat line. In any such installation, a careful check should be made to be sure that the line does not kink at any position of rotation. Also keep in mind that the line will be less flexible during cold weather.

Another difference which was noted was the fact that the tubular type lead-in is more difficult to strip down than conventional flat twin-lead. The type B line, shown in Figure 1, which is manufactured by American Phenolic Corporation, has two raised ridges on the outside of the line which makes it rather easy to locate the placement of the wire in the cable. Thus, the thinner section of the tube can be cut away using diagonal cutters, which then makes possible the stripping of the leads. When preparing the type D line, shown in Figure 1, greater care must be used since no ridges



Figure 5. Tubular Lead-In With Sealed End.

are present to show the location of the wires. By looking at the end of the line, however, the wires can be seen. The tubing can then be cut away to allow the stripping of the lines themselves.

The type C line, shown in Figure 1, is manufactured by Anaconda Wire and Cable Company. So far we have classified this particular line as a tubular type. In reality it is a pair of parallel lines which are properly spaced in a pair of polyethylene tubes which in turn are placed in a polyethylene casing. This construction can be seen by careful inspection of Figure 1. The stripping procedure for this particular type of line is a little more complicated than the other types, in that three casings must be removed. The outer casing may be cut using a knife or diagonal cutter. Cut this outside casing back on both flat sides for about 1-1/2 inches. Trim all the way around and remove the two sections. The casings on the inner sections can then be trimmed about an inch from the end. Care must be taken not to cut the wire itself since it is a solid conductor and any cut or nick may cause it to break more easily.

It is recommended that spade lugs be used for terminating the line. Due to the stiffness of the tubular type line, heavy duty lugs should be employed for this purpose.

Another great difference in tubular lines over that of the flat line is that a sealing process must be used to prevent moisture from entering the line. The tubular type line, such as type B and D in Figure 1, can be sealed by applying a soldering iron to the open end. This causes the material to become soft and tacky which allows the end to be pressed together, forming a seal. Figure 5 shows a section of line which has undergone this treatment. Care must be taken when performing this operation that excessive heat is not used. The iron should not come into contact with the wire itself as the copper, which has high heat conductivity, will melt the insulating material and might allow the wire to become separated from the tube.

A different procedure is recommended for the Anaconda line (Type C in Figure 1). This line may be sealed better by melting a small piece of the outside tubing and allowing the molten material to drop into the ends of the lines. Cut off a small piece of the outside coating (1/4" x 1/4") which was re-



So compact they fit anywhere. So many listings (over ten dozen) that you can meet any capacitance, voltage and combination requirement. Yes, singles, duals, triples and quads.

Multiple-section units have stranded wire leads and safety sleeves. Hi-purity aluminum construction minimizes corrosion. Vented for excessive gas pressures.

If ever there was a Jack-of-all-trades electrolytic, this is it—Aerovox Type PRS Dandee.

Ask your Aerovox distributor for Aerovox Dandees. Ask for latest catalog—or write us.



FOR RADIO-ELECTRONIC & INDUSTRIAL APPLICATIONS
AEROVOX CORPORATION
NEW BEDFORD, MASS., U. S. A.

In Canada: AEROVOX CANADA LTD., Hamilton, Ont.
 Export: 41 E. 42nd St., New York 17, N. Y.

moved during the stripping process. Hold this piece of insulating material with a pair of long-nosed pliers and heat it with a match. The material is flammable and will ignite. Hold the burning material over the end of the line, which should be held at an angle of about 45 degrees, and allow the molten material to drop inside the outer casing as well as the inner casings. Figure 6 illustrates this operation. Only a few drops are required to seal the end. If too much of the heated material is dropped on the line, the inner casings will melt. If this occurs, the line should be cut off and the process repeated. A little practice will make it possible to do a neat job of sealing. Figure 7 shows a section of line which has been sealed in this manner. As a word of warning, this operation should be performed at a point where the drops of molten material will not cause any damage. The end which attaches to the antenna should be sealed before taking the line onto the roof. The other end of the line can be sealed after the desired length is determined.

The insulators should be so positioned that sufficient spacing between the line and the house is maintained. Take special care when passing around metal eaves. A "drip loop" should be employed at the point where the transmission line enters the building. This is made by forming a loop or trap whereby moisture will drip off the bottom of the loop, rather than follow the lead-in into the building. When entering the building, the lead-in should be at a slightly upward angle. This lessens the chance of water following the lead-in into the home. In order to provide an escape for moisture caused by condensation inside the line, a small hole should be punched in the line as illustrated in Figure 8. A feed-through insulator should be used where the transmission line



Figure 7. Finished Seal on Anaconda ATV-270 Line.

enters the building. These are now available in various lengths so that a neat installation can be made.

In the event that it is desired to use a plug and socket arrangement for antenna distribution, a high quality plug and socket should be used. The insulating material in the socket and plug should be of a material that is not greatly affected by moisture and the contacts should be non-corrosive so that a good contact can be made. We did not require any plug and socket sets during our field survey; however, our experiences indicated that good clean contacts are mandatory for optimum UHF operation. Select any such plug and socket combinations with care.

In some areas, standoff insulators may not be available for tubular twin-lead. Some distributors may have available inserts that can be pressed into the flat-lead type insulators. Figure 9 shows such an insulator, along with the insert. The tubular-type insulators will undoubtedly become more readily available.

The problem of mounting the open-wire type line is much more difficult than with any of the other types. At this writing, we do not know of a suitable insulator which is readily available. It would appear that such an insulator could be made that attaches in some manner to the insulating spacer on



Figure 6. Sealing the Anaconda ATV-270 Line.

the open-wire line. Since the spacing and/or size of the insulator itself varies with different manufacturers, it may be that insulators will need be supplied for a specific brand of open-wire line. Even though the spacers are rather close together, care must be taken in handling this type of line so as not to disturb the spacing between the wires. Whenever possible the line should be held so that a minimum of flapping would be caused by wind. As suitable insulators become available this can be done quite easily.

The absence of any discussion of coaxial lines may have been noted. This is due to the fact that at no time during our tests were conditions encountered which required the use of a shielded type lead-in; therefore no tests were made using it. Normally, this type lead-in is employed where noise pickup in the transmission line itself is objectionable. UHF reception, we found, is not susceptible to the majority of man-made interferences (ignition, motor noise, neon signs, etc.), thus eliminating the need for a shielded type line. The increased attenuation inherent in

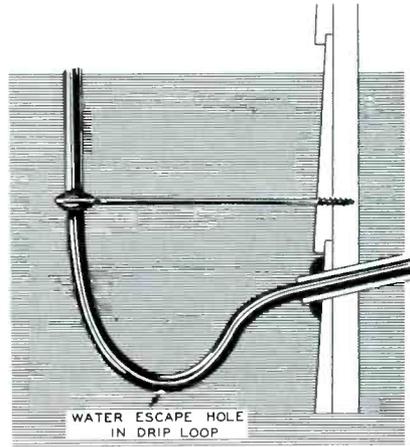


Figure 8. "Drip-Loop" With Condensation Escape Hole in Line.

this type of line more than offsets any advantage which it might have as far as the elimination of interference pickup at UHF is concerned. Therefore this type of line is not recommended for UHF applications.

In summarizing our experiences with the use of various types of transmission lines associated



Figure 9. Flat Line Insulator Stand-off With Tubular Insert.

with UHF reception, it appears that the tubular type lead-in is most satisfactory for the majority of UHF installations. Using our tests as a basis, we have drawn up Chart A which points out advantages and disadvantages of the various types of lead-in as well as the recommended application for each.

W. W. HENSLER

TUNER KIT (cont'd from page 41)

instructions supplied with the kit, to the letter. If this is done, the result will be a far more efficient job than would be obtained should improvisation be attempted.

Aside from the operational design considerations, here are some of the problems which had to be overcome by the manufacturer to make any field installation program a success.

1. A tuner had to be supplied which would fit physically in the oftentimes already crowded cabinet.
2. A satisfactory tuning drive system had to be incorporated that

would enable easy tuning on the part of the operator. This is usually accomplished by means of some sort of vernier control which had to be free from slippage and backlash. A minimum of controls should be added to the control panel to prevent complicating the operation of the receiver. This is very important as far as the acceptance on the part of the customer is concerned.

3. A kit had to be supplied that was easy to install. The more complicated the installation, the more chances there are for mistakes in mounting and wiring, resulting in inferior operation. Also the less

complicated the installation is, the less time will be required to do the job. This will result in lower costs to the customer, which is a big step toward customer acceptance of such an installation.

Many manufacturers are now supplying UHF field kits which overcome these problems. They are to be congratulated. These kits are the result of very careful designing and planning. The importance of doing a good installation job cannot be over-emphasized. As was previously stated, make sure the proper kit is obtained for a specific chassis or model, follow the instructions supplied with the kit and no difficulty should be experienced in making the installation. Not only is the installation itself profitable, but each satisfied conversion customer is a potential service customer.

A few minutes of instruction to the user in operation of the UHF tuner is highly recommended. Most of the UHF kits incorporate continuous type tuning. This system will be new to those people who have switch type VHF tuners, and a little instruction will go a long way to insure customer satisfaction.

W. W. HENSLER
MERLE E. CHANEY

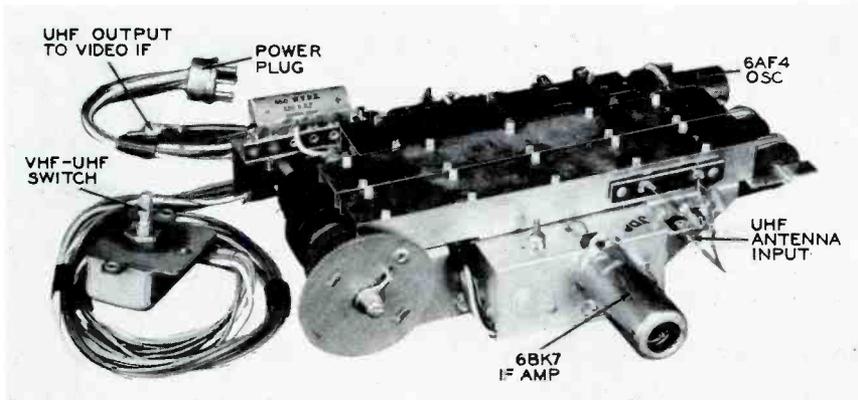


Figure 6. Front View of Raytheon UHF Converter Kit.



did you know . . .

that Rauland made the first rectangular tube in 1945?
everybody knows . . . that engineering leadership means
sales leadership . . . and that means RAULAND

THE RAULAND CORPORATION, 4245 N. KNOX AVENUE, CHICAGO 41, ILLINOIS • MULBERRY 5-5000

RAULAND

did you know...



that Rauland was the first company to produce the
electrostatic low focus voltage tube?
everybody knows . . . that engineering leadership means
sales leadership . . . and that means RAULAND

THE RAULAND CORPORATION, 4245 N. KNOX AVENUE, CHICAGO 41, ILLINOIS • MULBERRY 5-5000



DID YOU KNOW

that Rauland was the first company to manufacture
aluminized tubes on a production basis?
everybody knows . . . that engineering leadership
means sales leadership . . . and that means RAULAND

THE RAULAND CORPORATION, 4245 N. KNOX AVENUE, CHICAGO 41, ILLINOIS • MULBERRY 5-5000

Burlon brown advertising

STATUS OF TV BROADCAST OPERATIONS

The maps which follow on Pages 118, 119, 121, 122 and 123, show all cities which either have television stations operating or had been granted Construction Permits through January 31, 1953. The call letters, if assigned, and channel numbers are indicated on the maps. A legend is employed which shows whether the stations are UHF or VHF, operating or has Construction Permit only, and whether commercial or educational.

The chart below lists the cities which have been granted Construction Permits during the month of February, 1953. Thus, the data shown on the map and the chart below indicate the status of television stations through February 28, 1953.

Those cities which had one or more of the 108 pre-freeze stations are indicated on the map with a

solid dot. Adjacent to this dot is the number of pre-freeze stations located in that city.

The second chart lists the 30 television stations that are required to shift channels. As of February 28, 1953, seven of these stations had already shifted channels. The proposed dates of changes shown in this chart are estimates. In many cases, these changes must take place in a definite sequence and any delay experienced by one station may delay others.

It is hoped that in presenting the data on Construction Permits in map form, that it would be possible to see the number of permits granted in any given area. We sincerely hope that it serves this purpose.

CONSTRUCTION PERMITS GRANTED DURING FEBRUARY, 1953.

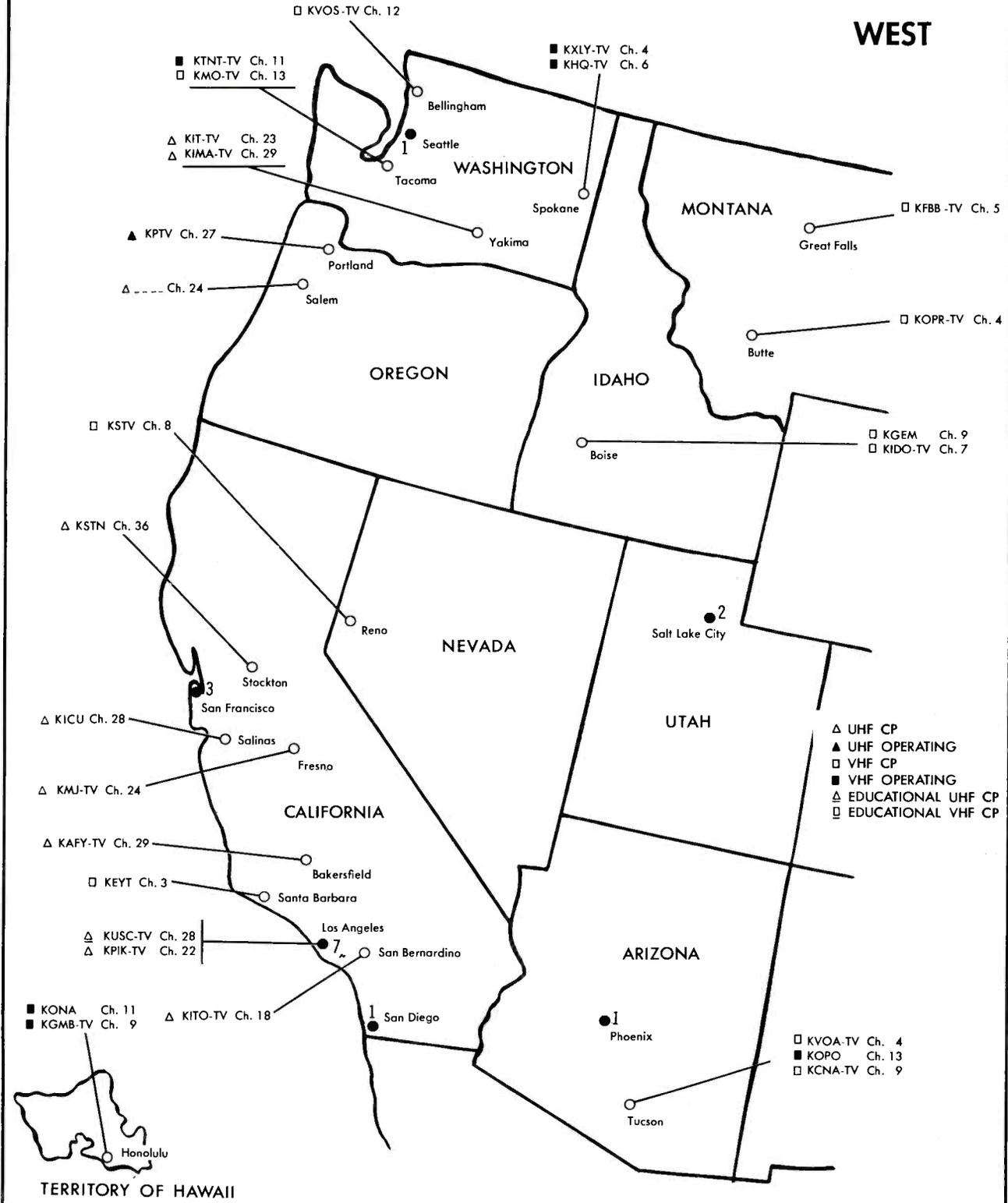
(See Map for CP's Prior to this date)

ALABAMA Decatur WMSL CH. 23	IDAHO Idaho Falls KID Ch. 3 KIFI Ch. 8 Pocatello KWIK Ch. 10 KJRL Ch. 6	LOUISIANA (cont.) ----- Ch. 20	MISSOURI Clayton KFUO Ch. 30 Hannibal KHMO Ch. 7 St. Louis WIL Ch. 42 Sedalia KDRO Ch. 6	NORTH CAROLINA (cont.) Charlotte WAYS Ch. 36 Durham ----- Ch. 46	OREGON Eugene ----- Ch. 20	VIRGINIA Hampton WVEC Ch. 15 Newport News WHYU Ch. 33
ARIZONA Mesa KTYL Ch. 12	ILLINOIS Champaign WDWS Ch. 3 Springfield ----- Ch. 20	MAINE Portland WPMT Ch. 53	MASSACHUSETTS North Adams WBRK Ch. 74	NORTH DAKOTA Minot KCJB Ch. 13 ----- Ch. 10	PENNSYLVANIA Scranton ----- Ch. 16	WEST VIRGINIA Parkersburg ----- Ch. 15 Wheeling ----- Ch. 51
CALIFORNIA Eureka KIEM Ch. 3 Monterey KMBY Ch. 8 Salinas KSBW Ch. 8	KANSAS Wichita ----- Ch. 16 Pittsburg KOAM Ch. 7	MICHIGAN Lansing WILS Ch. 54 Benton Harbor WHFB Ch. 42	MONTANA Billings KOOK Ch. 2 Butte KXLF Ch. 6	OHIO Ashtabula WICA Ch. 15	SOUTH CAROLINA Columbia WIS Ch. 10	WISCONSIN Beloit WGEZ Ch. 57 Milwaukee WCAN Ch. 25 Eau Claire WEAU Ch. 13
GEORGIA Macon ----- Ch. 47 Rome WROM Ch. 9 Valdosta WGOV Ch. 37	LOUISIANA New Orleans WJMR Ch. 61	MISSISSIPPI Gulfport WGCM Ch. 56	NEW YORK Elmira ----- Ch. 18	OKLAHOMA Oklahoma City KLPR Ch. 19 ----- Ch. 25 Tulsa ----- Ch. 23	TEXAS Dallas KLIF Ch. 29 Longview ----- Ch. 32 McAllen KRIO Ch. 20 Midland ----- Ch. 2 Texarkana KCMC Ch. 6	

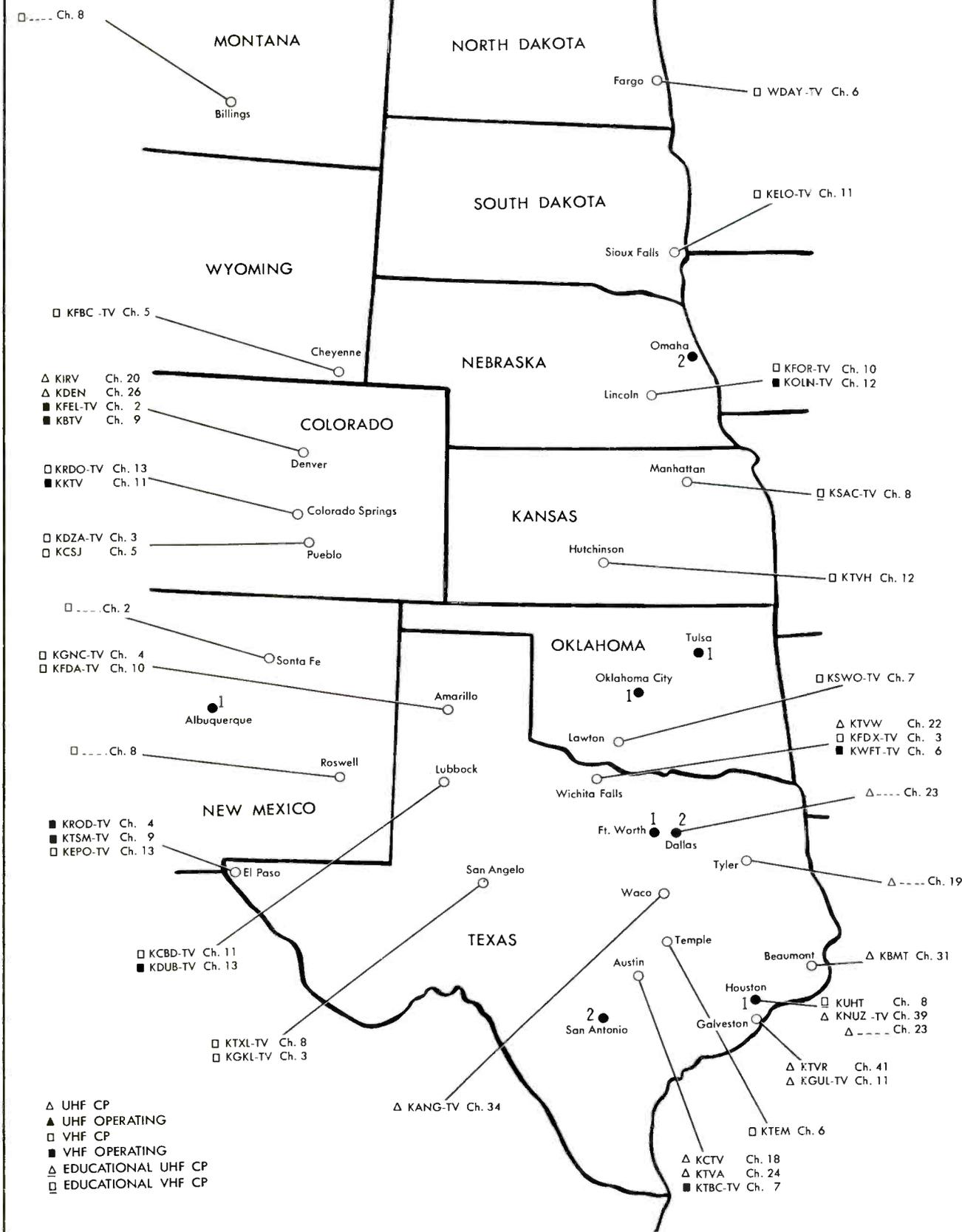
TV CHANNEL SHIFTS

CITY, STATE	STATION	OLD	NEW	CHANGE DATE	CITY, STATE	STATION	OLD	NEW	CHANGE DATE
Ames, Ia.	WOI-TV	4	5	Summer	Huntington, W. Va.	WSAZ-TV	5	3	8-5-52 (changed)
Atlanta, Ga.	WLTV	8	11	Fall	Johnstown, Pa.	WJAC-TV	13	6	10-4-52 (changed)
Birmingham, Ala.	WBRC-TV	4	6	Indefinite	Lancaster, Pa.	WGAL-TV	4	8	11-52 (changed)
Bloomington, Ind.	WTTV	10	4	Indefinite	Louisville, Ky.	WAVE-TV	5	3	4-53
Chicago, Ill.	WBKB	4	2	Indefinite	Louisville, Ky.	WHAS-TV	9	11	2-7-53 (changed)
Cincinnati, O.	WLWT	4	5	5-53	Memphis, Tenn.	WMCT	4	5	12-52 (changed)
Cincinnati, O.	WKRC-TV	11	12	10-26-52 (changed)	Milwaukee, Wis.	WTMJ-TV	3	4	Spring
Cincinnati, O.	WCPO-TV	7	9	3-53	New Haven, Conn.	WNHC-TV	6	8	Spring
Cleveland, O.	WXEL	9	8	Summer	Norfolk, Va.	WTAR-TV	4	3	June or July
Cleveland, O.	WNBK	4	3	Indefinite	Pittsburgh, Pa.	WDTV	3	2	11-23-52 (changed)
Columbus, O.	WLWC	3	4	6-53	Providence, R. I.	WJAR-TV	11	10	Early in 1953
Dayton, O.	WIWD	5	2	4-53	Rochester, N. Y.	WHAM-TV	6	5	June or July
Dayton, O.	WHIO-TV	13	7	3-53	Schenectady, N. Y.	WRGB	4	6	Indefinite
Davenport, Ia.	WOC-TV	5	6	Indefinite	Syracuse, N. Y.	WSYR-TV	5	8	Early Summer
Grand Rapids, Mich.	WOOD-TV	7	8	4-15-53	Wilmington, Del.	WDEL-TV	7	12	Indefinite

WEST



MIDDLE WEST





CAPACITORS

ASTATIC

PHONO CARTRIDGES



FUSES



TRANSFORMERS

ElectroVoice

PHONO CARTRIDGES

BURGESS

BATTERIES



CAPACITORS

Centralab

CONTROLS
CERAMIC CAPACITORS

EVEREADY

BATTERIES



CERAMIC
CAPACITORS

You can put your confidence in these famous products



CONTROLS



CONTROLS
RESISTORS

Jensen INDUSTRIES
PHONO NEEDLES



RF COILS



VIBRATORS



TRANSFORMERS

Sarkes Tarzian

SELENIUM RECTIFIERS

SYLVANIA



PICTURE TUBES
RECEIVING TUBES
SELENIUM RECTIFIERS



CAPACITORS



TRANSFORMERS

Walco

PHONO NEEDLES



PHONO CARTRIDGES

SELECT YOUR REPLACEMENT
NEEDS FROM THESE FAMOUS
QUALITY LINES LISTED IN
PHOTOFACT FOLDERS

- | | |
|-------------------|-------------------------|
| AEROVOX | MALLORY |
| ASTATIC | MERIT |
| BURGESS | MILLER |
| BUSSMANN | QUAM |
| CENTRALAB | RADIART |
| CHICAGO | RCA |
| CLAROSTAT | SELETRON |
| CORNELL-DUBILIER | SHURE |
| ELECTRO-VOICE | SPRAGUE |
| ERIE | STANCOR |
| EVEREADY | SYLVANIA |
| FEDERAL | SARKES TARZIAN |
| I R C | THORDARSON-
MEISSNER |
| JENSEN INDUSTRIES | TRIAD |
| JENSEN MFG. | WALCO |
| LITTLEFUSE | |



SELENIUM RECTIFIERS



SPEAKERS



TRANSFORMERS



FUSES



CAPACITORS
CONTROLS
SELENIUM RECTIFIERS
VIBRATORS



RF COILS



SELENIUM RECTIFIERS

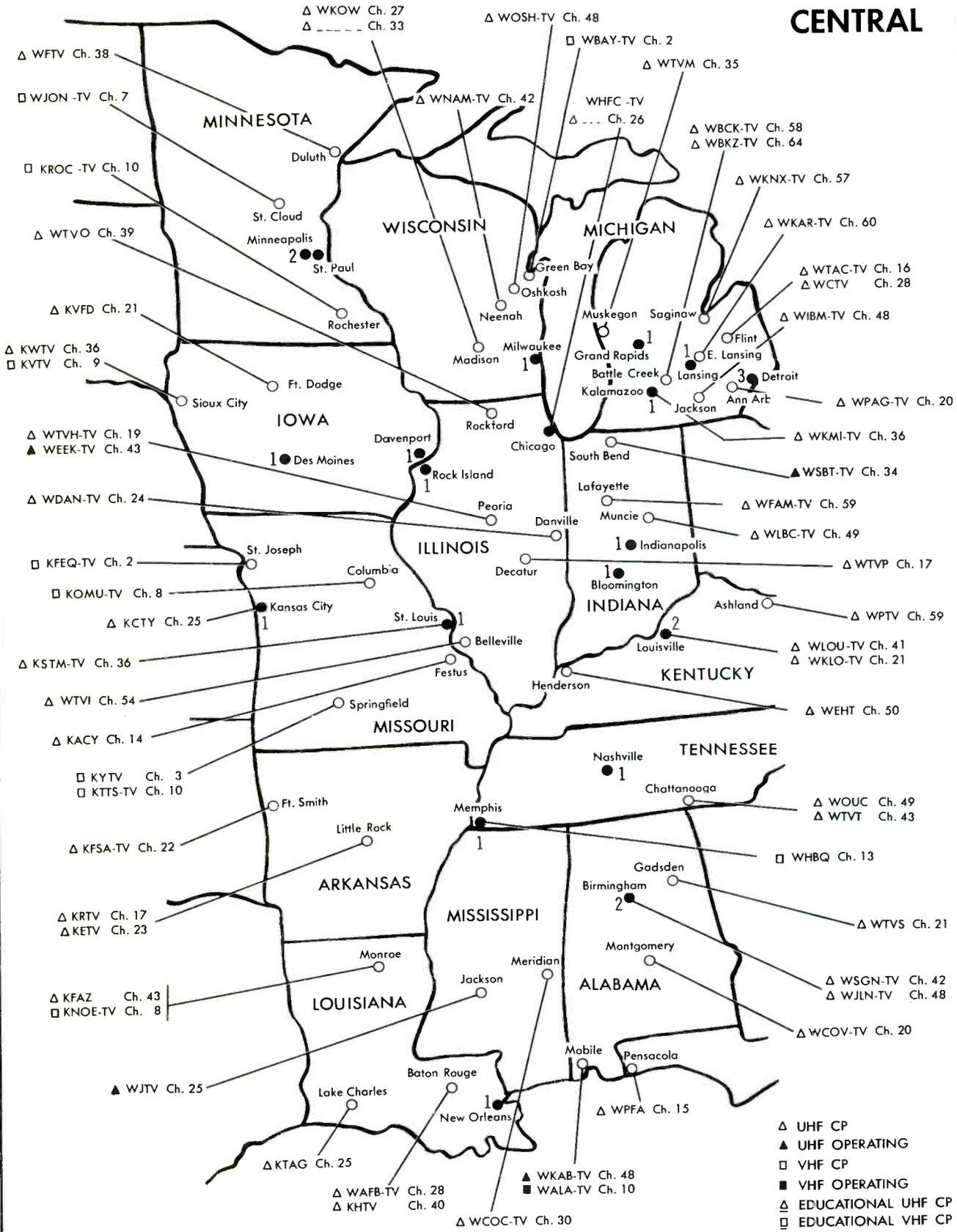
Quam
Adjust-a-Cone

SPEAKERS



TRANSFORMERS

CENTRAL



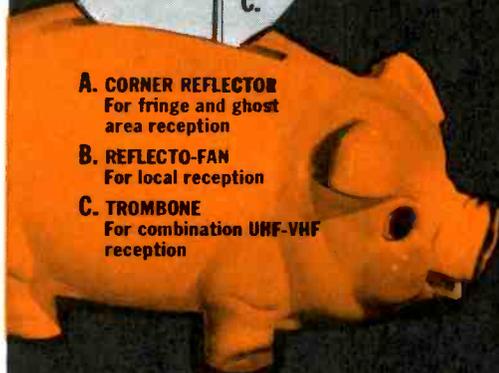
Like
money
in the
Bank...

WALSCO UHF-VHF



AVAILABLE NOW

- A. CORNER REFLECTOR**
For fringe and ghost area reception
- B. REFLECTO-FAN**
For local reception
- C. TROMBONE**
For combination UHF-VHF reception



YOU are completely protected when you buy, sell or install WALSCO. Every model is now a "proven performer"... thoroughly tested and endorsed in all the new UHF-VHF areas. Designed for all present and future channels. The best high gain, all channel performance and a model to fit every installation

Protect your profit... eliminate costly call-backs. Install WALSCO, America's most dependable TV antennas. It's like money in the bank!

WALSCO

Walter L. Schott Co.

3225 Exposition Place
Los Angeles 18, Calif.

Overseas Representative:
Ad Auriema, Inc., 89 Broad St.,
New York 4, N.Y.

WRITE FOR COMPLETE PRICE
AND CATALOG INFORMATION—Dept. P-53

How much time will you
spend on your next job?



to spot the cause of
trouble quickly and
accurately on your
next service job, take
along a copy of

**Mandl's
TELEVISION
SERVICING**



- A master index shows the possible causes of 100 trouble symptoms in sound and picture, and refers directly to the page on which servicing instructions are given.
- You'll learn simple signal tracing procedures, essential factors for successful VHF and UHF servicing, how to improve reception in fringe areas, how to troubleshoot A.G.C. and synchroguide circuits, and many more trade tricks in diagnosing troubles in minimum time.
- You'll see how each unit in the TV receiver functions, how it is set up by the different manufacturers, what flaws may occur in it, what points in the circuitry cause these flaws, how they affect the other components in the unit and how they show up on the TV screen.
- You'll have clear illustrations of scope patterns and station defects as well as hundreds of schematics to help you check and locate trouble. Every practical aid is here to help you do the best, most satisfactory servicing job in the minimum time. Try it out free of charge. See below. \$5.50

Do you know enough
about hearing aids?

Mandl's



HEARING AIDS

tells you how to select and get the most out of a hearing aid, and how to service it. Here is badly needed, reliable information on the various types of aids being manufactured today, their components, and their adaptability to different types and degrees of deafness, together with instruction for the serviceman on testing, adjustment and repair. \$3.50

Look them over at your dealer's or
write us for copies on approval

The Macmillan Company

60 FIFTH AVENUE, NEW YORK 11, N.Y.

TV SUPPLEMENTARY SHEET NO. 2

MODEL & CHASSIS	PART #	CATALOG #	FUNCTION	DESCRIPTION	LIST PRICE	MODEL & CHASSIS	PART #	CATALOG #	FUNCTION	DESCRIPTION	LIST PRICE	
ARVIN 6175TM 6179TM CHASSIS TE-331 TE-331-2	E22464-20	RTV-259	Vert. Lin./ Height	3000/2.5 Meg. 2W-W.W./carbon Conc. Dual	\$3.10		W-148861	Order From MFR.	AGC	1000 Ω 1W-W.W.		
	E22464-27	RTV-352	Contrast Vol./Sw.	1500/250 Ω Conc. Dual carbon--SPST	\$3.70	EMERSON 711B 712B 720B	390156	AG-61-S KSS-5	Vert. Hold	1 Meg. Ω carbon	\$1.25	
	E22464-34	AG-49-S KSS-3	Bright.	100K Ω carbon	\$1.25		390181	AG-52-S KSS-5	Bright.	200K Ω carbon	\$1.25	
	E22464-36	AG-83-S KSS-3	Vert. Hold	1.5 Meg. Ω carbon	\$1.25		390183	AG-44-S KSS-5	Hor. Hold	50K Ω carbon	\$1.25	
	E22464-38	AG-40-S KSS-3	Hor. Hold	25K Ω carbon	\$1.25		390196	AG-83-S FKS-1/4	Height	2 Meg. Ω carbon	\$1.25	
					390196		AG-83-S FKS-1/4	Focus	2 Meg. Ω carbon	\$1.25		
BELMONT- RAYTHEON C-1729A C-1731A M-1726A M-1726A	A10A-18441	RTV-218	Contrast/ Vol./Sw.	5000/1Meg. Tap 100K Ω Conc. Dual carbon DPST	\$4.50	CHASSIS 1201648	390197	A43-5000 FKS-1/4	Vert. Lin.	5000 Ω 2W-W.W.	\$1.25	
	A10B-17275	AG-49-S KSS-3	Vert. Hold	100K Ω carbon	\$1.25		390201	RTV-296	Contrast Vol./Sw.	1500/1 Meg. Conc. Dual carbon--SPST	\$3.70	
	A10B-17764	AG-44-S KSS-3	Bright.	50K Ω carbon	\$1.25		390202	AG-83-S FKS-1/4/SWB	Fringe Com- pensator	2 Meg. Ω carbon--SPST	\$1.25 .60	
	A10B-19218	AG-19-S FKS-1/4	Vert. Lin.	5000 Ω carbon	\$1.25		FADA 7C42 7C52	D220076G20	A43-5000 FKS-1/4	Vert. Lin.	5000 Ω 2W-W.W.	\$1.25
	A10B-19220	AG-61-S FKS-1/4	Height	750K Ω carbon	\$1.25			52.24	AG-84-S FKS-1/4	Height	2.5 Meg. Ω carbon	\$1.25
	A10B-19542	AG-63-Z KSS-3	Tone	1 Meg. Ω carbon	\$1.25	52.64		RTV-109	Contrast/ Vol./Sw.	750 Tap 500/500K Ω 2W-W.W./carbon Conc. Dual--SPST	\$4.50	
					52.66	RTV-110		Vert./ Hor. Hold	1 Meg./50K Ω Conc. Dual carbon	\$3.10		
					52.69	AG-44-S FS-3		Bright.	50K Ω carbon	\$1.25		
BENDIX 0AK3 21K3 21KD 21T3 21X3	CH262022-4	AG-42-S FS-3	Hor. Hold	30K Ω carbon	\$1.25	52.74	AG-84-S FKS-1/4	Focus	2.5 Meg. Ω carbon	\$1.25		
	CH262024-15	AG-27-S FKS-1/4	Noise Inverter	10K Ω carbon	\$1.25	* Some Models Use Part # 52.68						
	RV4C10 CH262025-4 CH262025-14	AG-83-S FKS-1/4	Vert. Hold	2 Meg. Ω carbon	\$1.25	7T32, 7T132, 721	52.24	AG-84-S FKS-1/4	Height	2.5 Meg. Ω carbon	\$1.25	
	RV4C07 CH262025-7	AG-85-S FKS-1/4	Height	3 Meg. Ω carbon	\$1.25	52.24	AG-84-S FKS-1/4	Focus	2.5 Meg. Ω carbon	\$1.25		
	RV4C07 CH262025-7 CH262025-12	AG-85-S FKS-1/4	Focus	3 Meg. Ω carbon	\$1.25	52.64	RTV-109	Contrast Vol./Sw.	750 Tap 500/500K Ω 2W-W.W./carbon Conc. Dual--SPST	\$4.50		
	RV4C11 CH262025-10 CH262025-13	AG-58-S FKS-1/4	Vert. Lin.	600K Ω carbon	\$1.25	52.66	RTV-110	Vert./ Hor. Hold	1 Meg./50K Ω Conc. Dual carbon	\$3.10		
	CH262041-2	AT-90 FS-3/SWA	Vol./Sw.	500K Ω carbon--SPST	\$1.25	52.68	A43-5000 FKS-1/4	Vert. Lin.	5000 Ω 2W-W.W.	\$1.25		
	LH262045-1	RTV-373	Bright./ Contrast	100K/1200 Ω Conc. Dual carbon	\$3.10	52.69	AG-44-S FS-3	Bright.	50K Ω carbon	\$1.25		
	CROSLEY DU-20CDM, CHB, CHM, COB, COM, DU-21CDM1, CDN, CHM, COB, COL, COLB, COM	B-148952	AG-83-S RS-2	Vert. Hold	1.5 Meg. Ω carbon	\$1.25	* Some Models Use Alternate Part # 52.74					
		B-148953	AG-44-S RS-2	Hor. Hold	50K Ω carbon	\$1.25	20C22 20T12 24T10	52.24	AG-84-S FKS-1/4	Height	2.5 Meg. Ω carbon	\$1.25
B-148966		AG-43-S RS-2	Bright.	40K Ω carbon	\$1.25	52.54	RTV-109	Contrast/ Vol./Sw.	750 Tap 500/500K Ω 2W-W.W./carbon Conc. Dual--SPST	\$4.50		
B-149693		A10-1500 KSS-3	Focus	1500 Ω 4W-W.W.	\$1.85	52.66	RTV-110	Vert./Hor. Hold	1 Meg./50K Ω Conc. Dual carbon	\$3.10		
B-151634		AG-15-S RS-2	Vert. Lin.	3000 Ω carbon	\$1.25	52.68	A43-5000 FKS-1/4	Vert. Lin.	5000 Ω 2W-W.W.	\$1.25		
B-152129		AG-83-S RS-2	Height	1.5 Meg. Ω carbon	\$1.25	52.69	AG-44-S FS-3	Bright.	50K Ω carbon	\$1.25		
C-151111		RTV-327	Contrast/ Vol./Sw.	1500/1Meg. Tap 250K Ω Conc. Dual carbon SPST	\$4.30							

Form No. 751836010-5M-11/52



This supplementary sheet is for use as an up-to-the-minute addition to your Clarostat RTV Manual. Manuals are available through your distributor or directly from Clarostat. Price \$1.00.

CLAROSTAT MFG. CO., INC.
DOVER, NEW HAMPSHIRE

PF INDEX

AND TECHNICAL DIGEST

INDEX TO ADVERTISERS
March-April 1953 Issue

Advertiser	Page No.
Aerovox Corp.	114
Alliance Mfg. Co.	112
American Phenolic Corp.	6
Astron Corporation	44
Theo. Audel & Co.	102
Brach Mfg. Corp.	96
Bussmann Mfg. Co.	34
Carter Motor Co.	100
Centralab (Div. Globe-Union, Inc.)	26
Chicago Transformer Co.	88
Clarostat Mfg. Co., Inc.	125
Conrac, Inc.	110
Cornell-Dubilier Electric Corp.	95
DuMont Labs., Inc., Allen B.	8
Electro Products Labs	104
Electro-Voice, Inc.	Center Spread
Electronic Instrument Co., Inc. (EICO)	96
Electronic Measurements Corp.	110
Electrovox Company, Inc.	102
Equipto.	102
Erie Resistor Corp.	92
General Cement Mfg. Co.	106
General Electric Co.	42
Haldorson Co., The	94
Hickok Electrical Instr. Co.	12
Hytron Radio & Electronics Corp.	14
Insuline Corp. of America	102
International Resistance Co.	2nd Cover
Jackson Electrical Instrument Co.	104
James Vibrapower Co.	86
Jensen Industries	110
JFD Manufacturing Co.	28
Krylon, Inc.	90
LaPointe Electronics, Inc.	16
Littelfuse, Inc.	4th Cover
The Macmillan Company	124
P. R. Mallory & Co., Inc.	20
Merit Transformer Corp.	10
National Electric Pro. Corp.	46 & 47
Ohmite Manufacturing Co.	84
PF INDEX & Technical Digest	88
Phoenix Electronics, Inc.	92
Planet Manufacturing Corp.	106
Precision Apparatus Co., Inc.	32
Pyramid Electric Co.	108
Quam-Nichols Co.	80
Radiart Corp.	36
Radio City Products Co., Inc.	24
Radio Corp. of America	22, 48
Radio Electronics	106
Radio Receptor Co., Inc.	98
Ram Electronics Sales Co.	106
Rauland Corporation, The	116
Regency Division, I. D. E. A. Inc.	4
Sams & Co., Inc., Howard W.	100, 104, 120
Walter L. Schott Co. (Walsco)	124
Shure Bros., Inc.	90
Sprague Products Co.	50
Standard Transformer Corp.	38
Sylvania Electric Products, Inc.	3rd Cover
Technical Appliance Corp.	82
Triplett Electrical Instrument Co.	18
T-V Products Company	100
United Catalog Publishers, Inc.	102
Videon Electronic Corp.	98
Ward Products Corp.	40
Westinghouse Electric Corp.	30
Xcelite, Inc.	98

+ More or Less -

In the first issue of the PF INDEX and Technical Digest (No. 24, January 1951) a questionnaire was enclosed. The primary objective of this questionnaire was to obtain guidance in selecting material for future issues that would be of greatest interest and benefit to the service technician.

Enclosed with PF INDEX and Technical Digest No. 36 was another questionnaire with the same purpose in mind. Your comments, suggestions and criticisms have been very enlightening and will be used as a guide in selecting PF INDEX subject material for forthcoming issues.

The top ranking subject requested two years ago was test instrument applications. From a rough estimate of the returns to date it would seem that this subject, or subjects concerning test instruments directly or indirectly, are still of high interest.

A review of past issues of the PF INDEX indicates, I believe, how much we have valued and tried to abide by your requests.

PF INDEXES Nos. 24, 25 and 26 included application of test instruments in troubleshooting and aligning of the RF and video IF sections of TV receivers. No. 27 contained an article on the construction of an impedance measuring device and the use of test instruments in tracking down TV receiver intermittents.

An article in PF INDEX No. 28 described the modification of scopes for 120-cycle synchronization and the application of the 120-cycle sweep in visual alignment of AM or FM receivers and the sound IF systems in television receivers.

A test for shorted turns in horizontal output transformers using standard test instruments was given in Index No. 29.

An article entitled, "The Value of Waveform Analysis," started in Index No. 30. It has, at this writing, appeared in four parts in Nos. 30, 31, 32 and 35.

No. 36 featured an article concerning test instruments and their application in servicing and aligning UHF equipment.

In addition to the above mentioned specific articles on test instruments and their uses, there have also been portions of other articles devoted to the subject.

"In the Interest of Quicker Servicing," has included alignment tools and accessories, picture tube circuit tester, power consumption measurements, coding of test leads, and general hints and kinks on test instruments and gadgets.

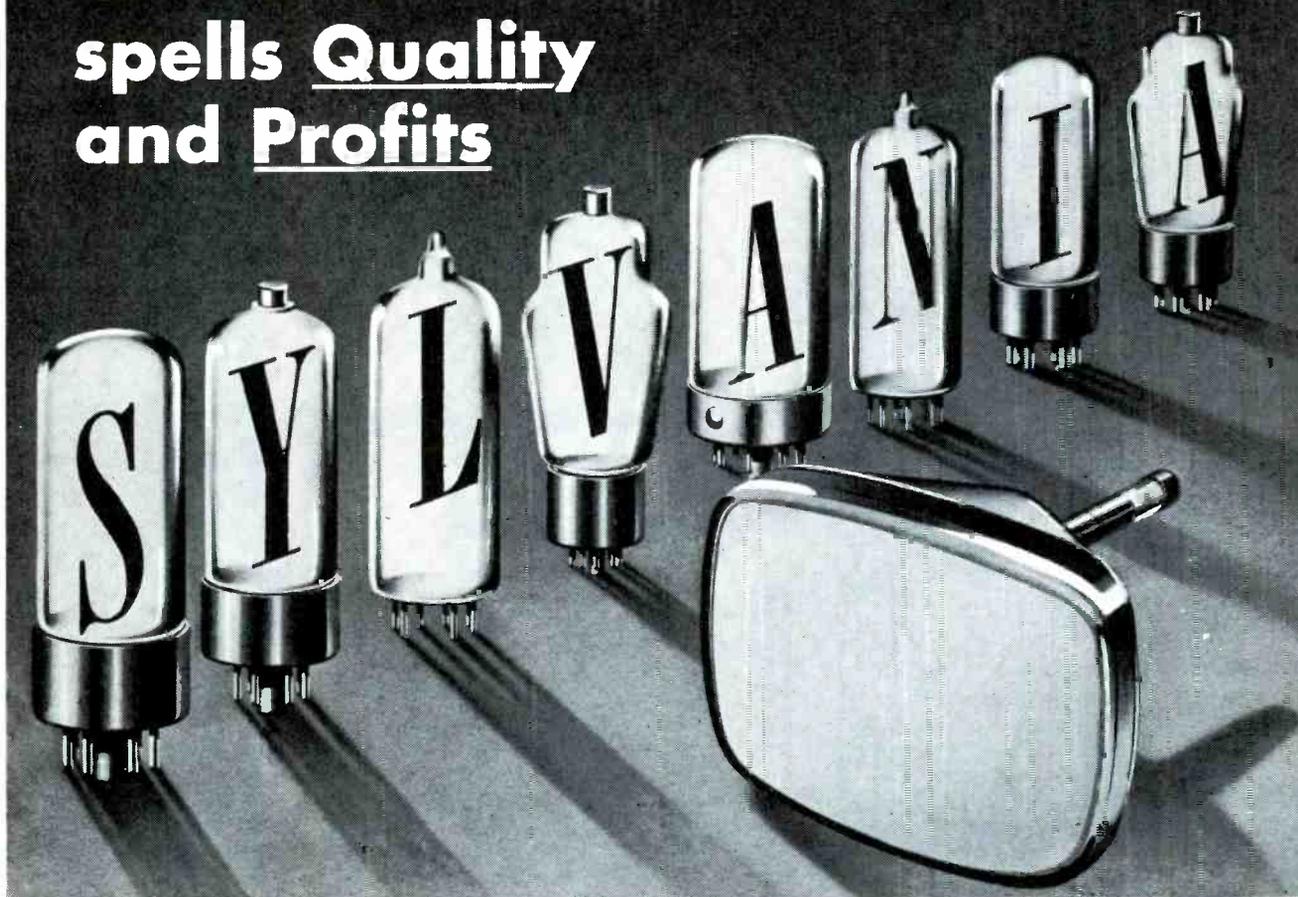
In "Shop Talk" you will find an article entitled: "What Test Equipment Will I Need and How Much Must I Spend for it?" Also featured in "Shop Talk" have been such subjects as: Signal Generator Calibration Check, High Voltage Probes, Oscilloscope Probes, Peak-to-Peak Probes, RF Probes, Signal Injection Probes, etc.

No. 36 and this, No. 37, have been almost entirely devoted to UHF. The speed with which UHF TV stations have begun operations in several sections of the country has warranted as rapid and complete coverage as we could possibly give you.

If these articles have been of interest and benefit to you, you take the bow, for you have been the guide. You, the service technician, requested - we have tried, and will continue to try, to fulfill.

- L. H. N.

This name spells Quality and Profits



UNBEATABLE quality is built into every Sylvania product. Even beyond that, Sylvania quality goes back to its essential metals, chemicals, and materials.

Sylvania quality is fundamental

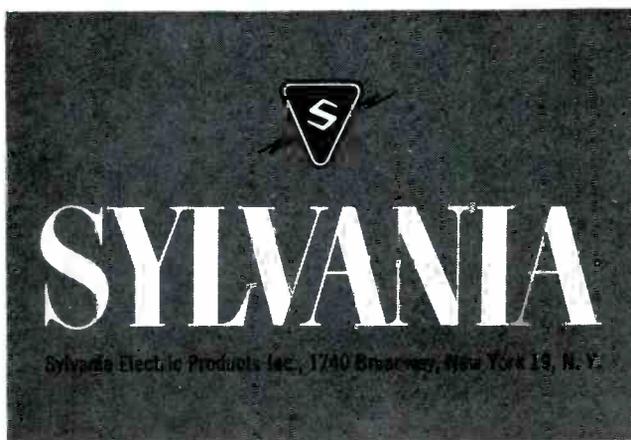
Sylvania grinds and formulates its own phosphors, and applies them by improved methods which assure maximum uniformity and fine picture-tube performance. Sylvania draws its own high-quality tungsten filaments and winds and tests its own coils.

Naturally, this far-reaching quality control results in an enviable nation-wide reputation. Today 7 of the top 10 television set makers use Sylvania Picture Tubes and Receiving Tubes. Naturally, too, Sylvania quality pays off in fewer call-backs, more satisfied customers . . . and *more profits for you.*

You'll find your friendly Sylvania Distributor a mighty high quality man to do business with, too. Call him today!



Be sure to install Sylvania Picture Tubes and Receiving Tubes in all the sets you service. Your customers know about Sylvania's fine quality and they'll appreciate your selection of Sylvania products for their sets.



RADIO TUBES; TELEVISION PICTURE TUBES; ELECTRONIC PRODUCTS; ELECTRONIC TEST EQUIPMENT; FLUORESCENT LAMPS, FIXTURES, SIGN TUBING, WIRING DEVICES; LIGHT BULBS; PHOTOLAMPS; TELEVISION SETS

POSTMASTER: If undeliverable for any reason, notify sender, stating reason, on Form 3547, postage for which is guaranteed.

From:

Burton browne advertising

takes the footwork out of fuse replacements!



ONE CALL IS ALL - 94 out of 100 times, with the Littelfuse One-Call Kit.

Special for servicemen: the famous One-Call Kit contains 45 TV fuses (6 most in demand types) and 6 TV snap-on fuse mountings - all in a clear plastic hinged cover bench box.
Littelfuse Inc., Des Plaines, Ill.

LITTELFUSE

