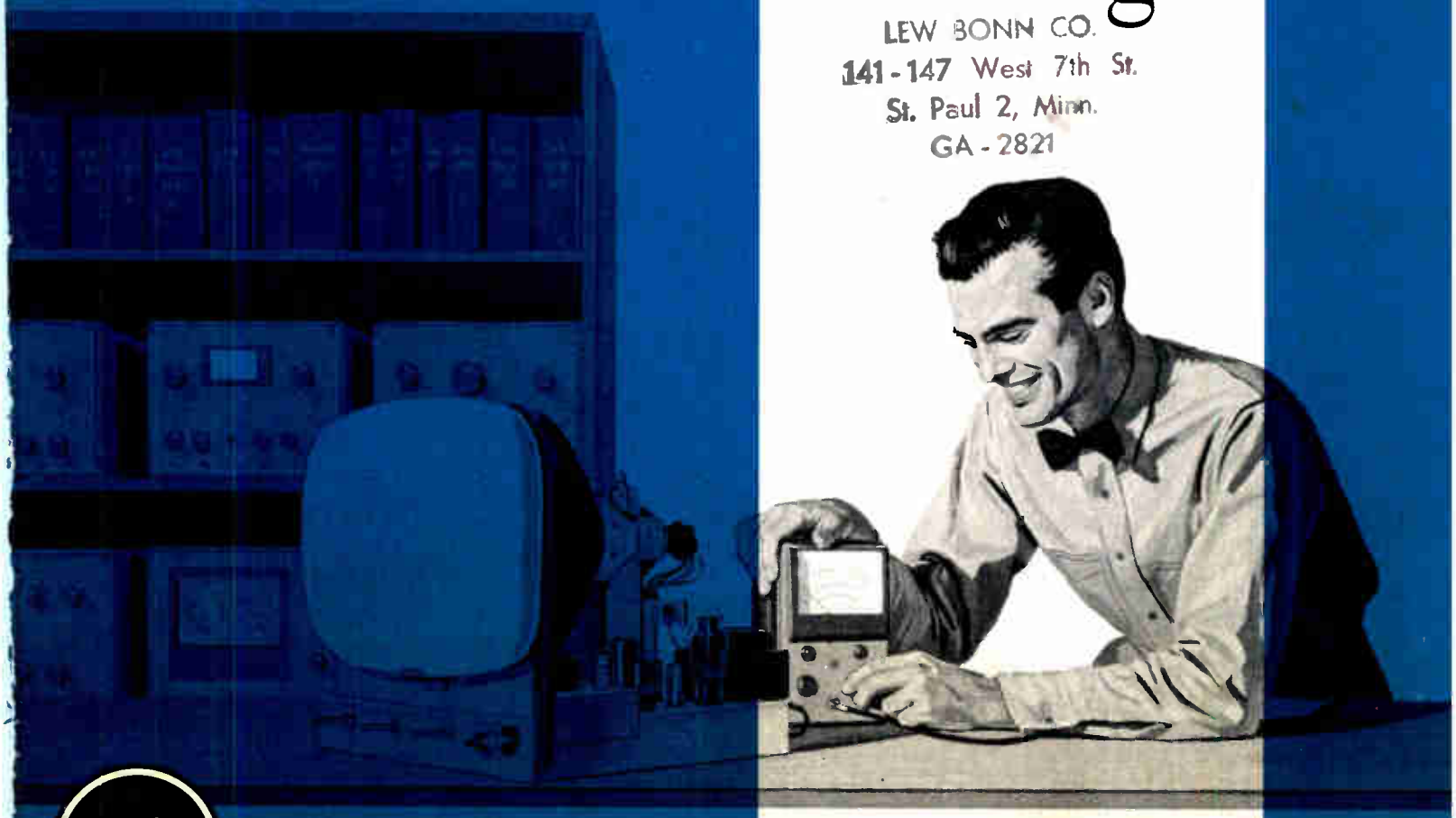
This BUSINESS of Radio and TV Servicing



RCA

RADIO CORPORATION OF AMERICA

TEST EQUIPMENT

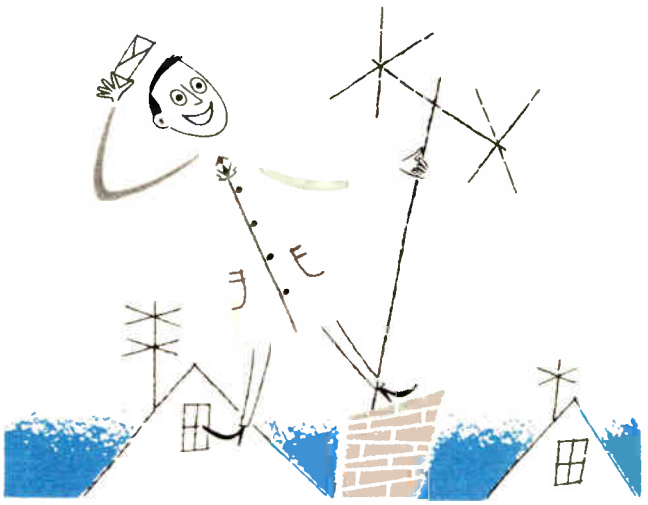
HARRISON, N. J.

This BUSINESS of Radio and TV Servicing

Radio and TV servicing can be highly profitable, but only if efficient technical service is combined with good business management. The importance of good business management, however, has not been fully appreciated by many servicing organizations. It is the purpose of this booklet to promote good management by suggesting certain business practices which apply particularly to the servicing field. The application of these tried and tested practices, based on wide experience, can make *your* Radio and TV servicing business more efficient and, consequently, more profitable.

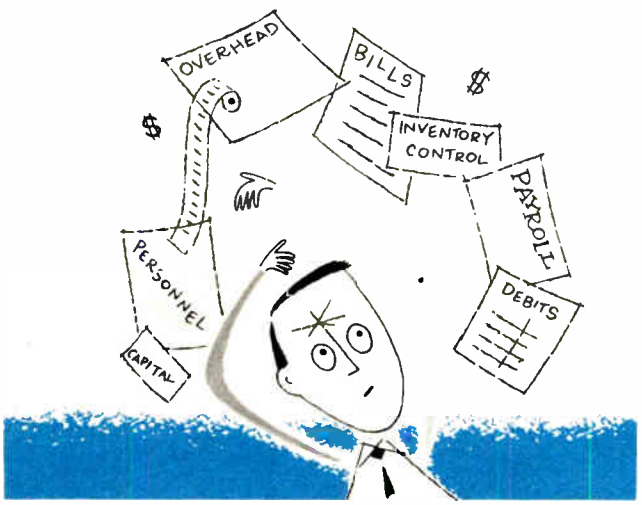
INTRODUCTION

After World War II, the television industry suddenly emerged as one of the ten leading industries in America. In 1949 there were 3,800,000 TV sets in use, and by 1952 this figure had grown to 20,000,000. The rapid growth of this new entertainment medium required a radical departure from the accepted practices of the Radio industry in both servicing and installation procedures. TV dealers had to enlarge their small radio servicing shops to meet the demands of their



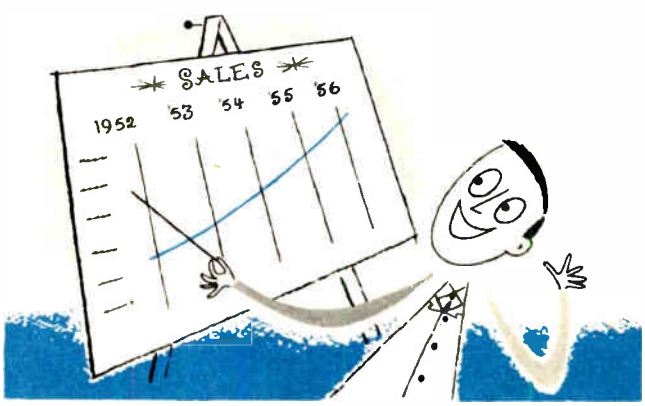
television customers. Technical staffs had to be increased and trained in new installation and servicing techniques, new specialized TV test equipment had to be procured, larger and more diversified stocks of parts, tubes, and installation materials were required, and shop quarters had to be remodeled to accommodate additional per-

sonnel and bench facilities. New servicing shops began to appear in answer to the growing demands for television installation and maintenance.



This sudden television servicing expansion soon began to experience the "growing pains" common to most new businesses. A large number of the TV servicing organizations were founded and are operated primarily by technicians, many of whom had no specialized business training or experience. Many failed to recognize that the overall efficiency of the salaried technician is the most important factor affecting the profit picture of the servicing business (as distinguished from good auditing, bookkeeping, billing, and employment practices). In this booklet, suggestions for putting your servicing business on a sound and profitable basis are therefore limited principally to methods for increasing the efficiency of the technician and thus improving the profit picture of the organization as a whole.

The practices outlined are not intended as a "cure-all" for every problem confronting a servicing organization. These suggestions should be useful, however, because they are based on the practical experience of successful television servicing organizations. Many practices are simply the result of trial and error, while others were developed by specialists. Although some suggestions apply to supervisors, stockmen, and other specialized personnel which only a medium-size or large servicing business would employ, all may be applied in principle and should be helpful to any servicing organization, regardless of size or geographical location. *The small business of today, if properly managed, may well be the large business of tomorrow.*



TELEVISION CALIBRATOR WR-39C

Variable-Frequency Oscillator

Fundamental Frequency range	19-110 Mc in 4 bands 170-240 Mc in 2 bands
Range using second harmonics	38-220 Mc in 4 bands 340-480 Mc in 2 bands
Output attenuator range	100% to 1%

Crystal Marker Accuracy

.25 Mc position	± 0.03%
2.5 Mc position	± 0.01%
4.5 Mc position	± 0.03%

Internal Modulation Frequencies ..... 0.25 Mc, 4.5 Mc, audio

Wide Band Modulator

Frequency range	60 cps to 30 Mc
Voltage at "MOD IN" jack	0.05 volts (approx)

Detector Sensitivity

External signal beating with VFO	1000 microvolts
External signal beating with crystals	10,000 microvolts

Tube Complement ... 2-6J6, 2-6BH6, 1-6AS6, 1-6C4, 1-0A2, 1-6X4
Power Supply ... 105/125 volts, 50/60 CPS
Dimensions ... 10" h, 13½" w, 7½" d.
Weight ... 16 lbs.
Finish ... Blue-gray hammeroid case, satin-aluminum panel

$242.50 (Suggested User Price) includes rf-output cable, phone plug

You're looking at one of the most advanced television servicing instruments of its kind—the RCA WR-39C Television Calibrator. It's a beauty, isn't it?

A quality instrument from electrical performance to attractive styling, the WR-39C is a fine example of expert engineering and functional design. It's all the things you've ever wanted in a TV calibrator, *and more.*

Included in this one compact, portable unit: (1) a crystal-calibrated TV marker generator with dual picture and sound markers, for all TV VHF frequencies (usable harmonic output in UHF regions); (2) a bar-pattern generator for linearity adjustments; (3) a miniature rebroadcast transmitter for checking all 12 VHF channels; (4) a heterodyne frequency meter, including amplifier and speaker; (5) a signal generator operating on fundamentals in all 12 VHF TV channels for TV and if ranges; (6) a dual crystal standard with three crystals provided.

The WR-39C is a basic television instrument for shop, lab and factory alignment applications, marking scope patterns, making linearity adjustments, setting local-oscillator frequencies, aligning traps, calibrating signal generators, aligning FM receivers and measuring unknown frequencies.

PLANNING AND USING A BUDGET

In the proper operation of any commercial business, it is necessary to plan in advance as much as possible. It is desirable to set a goal for a given period of time, at least for the ensuing month, and to make every effort to reach this goal by adhering rigidly to the projected planning, allowing for a reasonable margin of flexibility to cope with unexpected contingencies.

One of the best methods of establishing a systematic program of advance planning is to set up a simple operating budget. Such a budget may be on a monthly, quarterly, or yearly basis. In fact, for many operations, all three are desirable.

Before preparing your budget, it is necessary that certain facts and figures should be obtained in advance. When you establish a gross sales figure you should estimate each individual source of income. Include for example, expected income from installations and service calls, income from multiple outlet installations, monthly income from existing and new service contracts, parts sales, and other income-producing factors. All these income sources, and others if any, should be anticipated and included in the gross sales figure. After your total gross sales figure has been determined, operating expenses should be carefully analyzed and planned. The manpower required to handle the estimated sales volume can be determined by computing the number of man hours necessary to perform the jobs planned, based on the existing average rate of productivity per man. Salaries (including that of the owner or manager) and employee service expenses (vacations, paid holidays, sicktime) must also be included. Consideration should also be given to extraordinary circumstances which make extra compensation for overtime necessary, such as adverse weather conditions or peak work loads prior to holidays. Provision should be made in the budget for advertising and sales promotional expense; a definite amount of money based on a percentage of gross sales should be allocated for this purpose.

Material cost of both installation and service parts, which next to salaries represents the largest controllable expense item, must be carefully estimated in advance, with past performance figures serving as a guide. All other operating expenses should then be estimated, including such items as rent, building operating expenses, office supplies, telephone bills, depreciation of trucks and other capital equipment, truck operating expenses, insurance, taxes, and miscellaneous expenses.

A sample budget is shown in Figure 1. By frequent comparison of the operating

TELEVISION SWEEP GENERATOR WR-59C

Say goodbye to sweep-generator problems! Ever have difficulty with visual alignment of TV receivers and front ends? Who hasn't! Then why not find out about the television sweep generator preferred and used by most major television manufacturers for the rigors of continuous production-line service . . . the RCA WR-59C Television Sweep Generator.

Professional service technicians find the WR-59C tops for visual alignment and trouble-shooting of TV tuners, sound and picture if amplifiers, trap circuits, and video amplifiers. Combining such outstanding features as preset switch positions for all VHF TV channels and continuous tuning from 300 Kc to 50 Mc, the WR-59C has a high-output voltage flat and free from spurious responses. Fundamental signals are generated on all channels by a push-pull oscillator.

Such bonus features as a special blanking circuit for producing a zero reference line on an oscilloscope for quantitative gain measurements and for balancing discriminator circuits, and a phase-controlled sweep voltage at power-line frequency for 'scopes lacking sweep and phase controls, a dual-piston attenuator with a range down to 5 microvolts . . . make this instrument a welcome addition to the most professional of service shops.

RF.....TV Channels 2 to 13-preset. Maximum Sweep Frequency is not less than 12 Mc

IF.....300 Kc to 50 Mc, continuous tuning

Sweep Width.....continuously variable for both IF and RF ranges

Output Voltage (rms).....0.1 volt min.

Cable Termination

RF Positions.....300 ohms balanced
IF Position.....100 ohms

Maximum Attenuator Ratio

RF Positions.....20000 to 1
IF Position.....4000 to 1

Maximum Amplitude Variation of Sweep Envelope (at maximum rated sweep width)....All positions less than ±1 db

Horizontal Sweep for Oscilloscope

Phase Adjustment Range.....160°
Frequency.....Power Line

Tube Complement.....2-6J6, 2-6C4, 1-6AT6, 1-6X4

Power Supply.....105/125 volts, 50/60 cps

Dimensions.....9¾" h, 13½" w, 7½" d

Weight.....20 lbs.

Finish....Blue-gray hammeroid case, satin-aluminum panel

$274.50 (Suggested User Price) includes balanced 300-ohm rf output cable and resistance terminated if/vf-output cable

budget with the actual expenses, you can quickly obtain a good picture of just how your operation is progressing. To get the maximum value from this type of budget, you will of course have to keep accurate records. Record keeping is always a desirable business practice and, depending on the size of the business, can range from a small ledger to a complete bookkeeping department. An accurate up-to-date budget and its related accounting records, serves not only as a "barometer" indicating the trend of your business, but also as an itemized list of operating expenses which are deductible on income tax returns. When you complete the "actual" column, shown on the sample budget, it becomes a Profit and Loss Statement for the particular month. Inventory movement, shown at the bottom, is another aid to proper evaluation of your business operations.

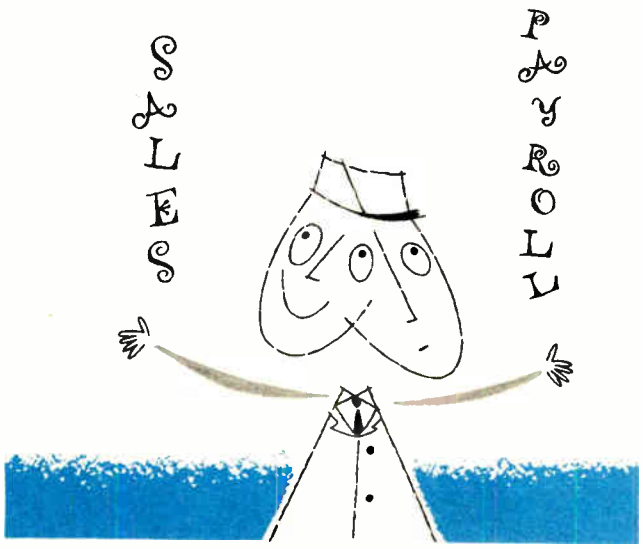
MONTH JULY	BUDGET		ACTUAL	
SALES	$	%	%	$
INSTALLATIONS	700	-	-	600
CONTRACT RENEWALS	1600	-	-	1500
CHARGE SERVICE (C.O.D.)	5000	-	-	6500
ALL OTHERS	400	-	-	500
GROSS SALES	7700			9100
EXPENSES				
TOTAL PAYROLL	2700	35.0	36.0	3275
EMPLOYEE SERVICE EXPENSE	385	5.0	5.0	455
TOTAL MATERIAL	1230	16.0	15.5	1410
TOTAL TRUCK COST	420	5.5	6.0	550
TOTAL SALES EXPENSE	115	1.5	1.2	115
RENT—BUILDING EXPENSES	150	1.9	1.6	155
OFFICE SUPPLIES—POSTAGE	40	.5	.5	45
TELEPHONE	20	.3	.3	30
DEPRECIATION	70	1.0	.8	70
INSURANCE AND TAXES	75	1.0	.9	80
TRAVEL REIMBURSEMENT	80	1.0	1.0	100
MISCELLANEOUS	30	.3	.6	50
TOTAL OPERATING EXPENSE	6315	69.0	69.4	6335
NET OPERATING INCOME	2385	31.0	30.6	2765

INVENTORY	OPENING BALANCE	RECEIPTS	USAGE	BALANCE END OF MONTH
	$12225	$800	$1230	$11795

FIG. 1

CONTROL OVER SALARIES AND WAGES

When controllable expense items on the budget are considered in the order of their relative size, we must begin with payroll. If a servicing business is to show a profit at the end of a given period, a satisfactory ratio of payroll-to-sales must be maintained. The size of the particular business is a major factor in the determination of this figure; normally, the average TV servicing organization should not allow its total payroll to exceed 40% of its gross sales. This rule of thumb applies to small as well as large service organizations. The maintenance of a daily report of sales and payroll provides a valuable tool to assist you in controlling this important expense. Certain definite conclusions may be drawn from this report: it can help you decide whether or not overtime can be utilized profitably; whether your technical staff should be increased or reduced, and whether additional sales effort is required. Since labor expense is such a costly item, every effort must be made to obtain a maximum return for each payroll dollar spent.



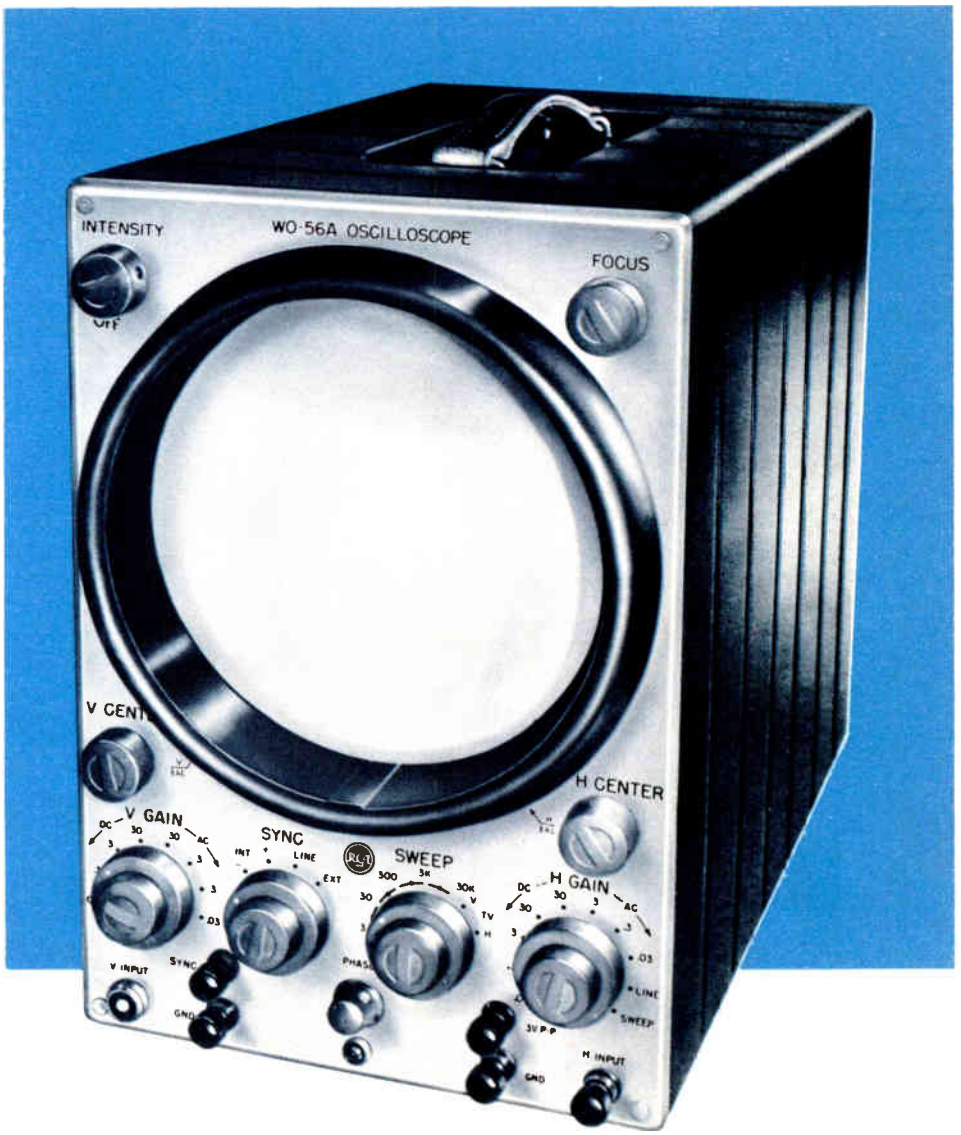
7" OSCILLOSCOPE WO-56A

There's just something "extra" about the WO-56A that makes the professional technician itch to get at the controls.

And just look at those controls! Dual concentric knobs for all coarse and fine adjustments eliminate unnecessary hunting and fumbling when you're locking in on a tricky wave form.

Yes, here's a 'scope *designed for you*—the user. From the large 7" mu-metal-shielded CRT in a compact, space-saving cabinet to performance standards which include high sensitivity and wide frequency range—the WO-56A *delivers* for laboratory, factory and shop.

Identical vertical and horizontal direct-coupled, push-pull amplifiers have frequency-compensated and voltage-calibrated attenuator networks. A horizontal trace expansion of 3 times screen diameter with comparable vertical centering permits observation of minute trace detail. You'll like the special TV preset sweep facilities, the retractable light shield, 60-cycle sweep and wide angle phasing control, "plus" and "minus" sync for locking-in "upright" or "inverted" wave shapes, high input impedance, peak-to-peak calibrating voltage, and many other time saving features.



Frequency Response

Vertical Amplifier { Flat from 0 to 500 Kc within —2 db
Flat from 0 to 1 Mc.....within —6 db

Input Resistance and Capacitance

Vertical Amplifier
With Direct Probe and Cable WG-218 .....1 megohm shunted by 75 $\mu\mu f$
With Low-Capacitance Probe WG-216B.....10 megohms shunted by 9.5 $\mu\mu f$
Horizontal Amplifier .....1 megohm shunted by 35 $\mu\mu f$
Sync Input .....1 megohm shunted by 35 $\mu\mu f$

Deflection Sensitivity

Vertical Amplifier	Millivolts Per inch	
	rms	p-p
With Direct Probe and Cable WG-218	10.6	30.0
With Low-Capacitance Probe WG-216B	106.0	300.0
Horizontal Amplifier	21.2	60.0

Sweep Frequencies

Variable.....3 cps to 30,000 cps
Preset..... { "TV/V" position approx. 30 cps
"TV/H" position approx. 7875 cps

Power Supply.....105/125 volts, 50/60 cps

Tube Complement..... { 4-6BH6, 5-12AU7, 1-6X4,
1-1V2, 1-7JP1

Dimensions.....13⅜" h, 9" w, 16⅝" d

Weight .....31 pounds

Finish....Blue-gray hammeroid case, satin-aluminum panel

$217.50 (Suggested User Price) complete with matched probes and cables, including the WG-216B Low-Capacitance Probe

DAILY TIME REPORT

The performance of an individual serviceman or the owner himself (in case of a one-man shop) can be readily and easily evaluated if a few simple forms are used as part of the routine daily operation. One of the most valuable of these forms is the Daily Time Report, often abbreviated and called DTR.

A typical Daily Time Report is given in Figure 2. The primary purpose of such a form is to provide a complete summary of the serviceman's daily activities. From the information contained in such a report, it is a simple matter to determine: (a) payroll (over-time); (b) productivity; (c) cash collections; and (d) vehicle mileage. The Daily Time Report is also of value to the independent serviceman since it provides him with a convenient method of recording his own time, expenses, and jobs completed.

Every servicing organization should use some system of job-numbered cards or service orders to record the necessary data for billing. (See Figure 3.) This job or order number is inserted in the first column of the Daily Time Report by the serviceman as he routes each of his calls prior to leaving the shop. If a duplicate copy of this form is left in the service shop, it can be used for contacting the serviceman during the day if it becomes necessary.

The column headed "Work Code" identifies by code number the types of service calls or installation jobs. For example, in a very simple code system, "CS" represents a regular *contract service* call; "DS," a non-contract or C.O.D. *demand service call;* "OA," an *outdoor antenna* installation; "AR," an *antenna repair.*

Non-productive time should also be coded and recorded. For example: "ST" represents the number of minutes spent in the

FIG. 2

DAILY TIME REPORT

DATE

MILEAGE START 14635

MILEAGE FINISH 14670

JOB NUMBER	WORK CODE	TRAVEL MILES	TRAVEL MINUTES	TIME ARRIVE	TIME LEAVE	JOB TIME MINUTES	JOB STATUS	COLLECTIONS CODE	COLLECTIONS AMOUNT	EXPENSES DESCRIPTION	EXPENSES AMOUNT	
	ST			8:30	8.45	15				PARKING		30
10930	DS	5	15	9:00	9:30	30	C	CA	4.50	TEL SHOP		20
10641	DS	3	10	9:40	10:20	40	C	CH	5.45	BRIDGE TOLL		50
10853	CS	4	15	10:35	11:20	45	C					
10504	AR	7	20	11:40	12:30	50	C					
		Lunch		12:30	1:00							
10932	DS	3	10	1:10	1:45	35	C	CA	4.50			
10903	CS	1	5	1:50	2:30	40	C					
10910	DS	2	10	2:40	3:10	30	RB					
10897	DS	4	15	3:25	3:55	30	C	CH	6.75			
10849	ES	3	10	4:05	4:40	35	C					
	ST	3	10	4:50	5:00	10						
TOTALS		35	120 (2 HR)			360 (6 HR)			21.20			

MILEAGE EXPENSE

TOTAL EXPENSE 1 00

COMMENTS

VEHICLE NO.	APPROVED BY	COLLECTIONS RECEIVED	TECHNICIAN'S SIGNATURE
37	J Long	A. Mueller	H. Cumming

Radio-TV Service, Inc.

415 SOUTH 5th STREET • HARRISON, N. J.

SERVICE ORDER

10930

NAME

STREET

CITY 'PHONE

SPECIAL INSTRUCTIONS

NATURE OF CALL

DATE RECEIVED | DATE PROMISED

MAKE | MODEL | SERIAL

CONTRACT DATA — COMPLETE — PARTS — C.O.D. — CHECK

DATE	NAME	JOB DATA	HOURS	MILES	EXPENSE

MATERIAL USED

QUANTITY	PART NO.	DESCRIPTION	AMOUNT

CHARGES

MATERIAL

LABOR

TOTAL DUE C.O.D.

THE MATERIALS AND WORKMANSHIP LISTED ABOVE HAVE BEEN RECEIVED IN GOOD CONDITION AND THE JOB COMPLETED SATISFACTORILY

CUSTOMER'S SIGNATURE

RCA *We use and recommend RCA Tubes, Parts, Batteries and Test Equipment*

FIG. 3

JOB STATUS CODES

COMPLETION CODES

COMPLETED JOB	C
DUPLICATE ASSIGNMENT	DA
NOT HOME	NH
NO PERMISSION TO INSTALL.	NP
WRONG ADDRESS	WA
TEMPORARY INSTALL. COMPLETED (INCOMPLETE)	TEMP. C

RESCHEDULE CODES

REQUIRES ANTENNA WORK	RA
CHASSIS PULLED FOR BENCH WORK	RB
REQUIRES CABINET WORK	RC
REQUIRES PARTS	RP
REQUIRES SERVICE WORK	RS
TEMPORARY INSTALLATION	R-TEMP.

FIG. 4

shop waiting for job assignment and parts requisitioning, as well as "check-in" time at the end of the day; "N-1" represents non-profit absenteeism; "N-3" represents an incomplete call. Obviously there are unlimited combinations of letters and numbers that may be used for coding purposes.

The examples shown here are only a few suggested codes that may be applied to various types of jobs. Small service organizations use only a few basic classifications, mainly to differentiate between jobs for record purposes. A number of large service businesses use an elaborate system of breaking down each job into a separate classification and applying a distinct code to each. This code breakdown is valuable when a detailed cost analysis is made. Each job can be studied from a time and labor standpoint, and a definite standard cost applied; i.e., a two-man installation may average 2½ hours per man including travel time, whereas a service call may average ¾ hour per call including travel time. Once these standards have been established for each job, it is then possible to estimate labor costs, based on prevailing wage rates, and arrive at a suitable charge to be made for the work performed. It is helpful to have cards on which the codes are listed to insure accurate classification. The charts in Figure 4 illustrate several different breakdowns of job types.

WORK CODES
A. ANTENNA INSTALL. ACTIVITIES

INSTALLATIONS	WORK CODE
INDOOR, BUILT-IN, EXISTING ANTENNA	A-1
ATTIC INSTALLATION	A-2
OUTDOOR—1 MAN	A-3
OUTDOOR—2 MAN	A-4
ANTENNA MOTOR ON ABOVE INSTALLS	Y
ADDITIONAL ANTENNA—SEPARATE LINE	Z
ANTENNA SERVICE CALLS	
ANTENNA REPAIR—1 MAN	A-5
ANTENNA REPAIR—2 MAN	A-6
REORIENTATION—1 MAN	A-7
REORIENTATION—2 MAN	A-8
RELOCATE SET IN HOME—1 MAN	A-9
RELOCATE SET IN HOME—2 MAN	A-10
DISASSAMBLE—MOVE INSTALL—1 MAN	A-11
DISASSEMBLE—MOVE INSTALL—2 MAN	A-12
SPECIAL ANTENNA ASSIGNMENTS	A-S
ANTENNA CHECK-IN ALLOWANCE	A-C

WORK CODES
B. SERVICE ACTIVITIES

REGULAR SERVICE	WORK CODE
CONTRACT SERVICE	S-1
CHARGE (C.O.D.) SERVICE	S-2
CONTRACT CHARGE SERVICE	S-3
CALL BACK	S-4
TRANSPORT CHASSIS	S-5
BENCH SERVICE	S-6
CABINET SERVICE	S-7
SPECIAL SERVICE ASSIGNMENTS	S-S
SERVICE CHECK IN ALLOWANCE	S-C
C. NON-PRODUCTIVE TIME	
ABSENTEEISM	N-1
INCLEMENT WEATHER	N-2
INCOMPLETED CALL	N-3
NO ASSIGNMENT	N-4
ALL OTHER	N-5

5" OSCILLOSCOPE WO-88A

If your present 'scope is a temperamental performer on the service bench, or if your business is limited by "substitute" TV servicing methods, you owe it to yourself to find out about the "88".

"Superlative in its price class" best describes this new 5" 'scope.

Tops on the list of quality features is the 88's "picture-perfect" square-wave response and its remarkably faithful reproduction of horizontal and vertical sync and blanking pulses, sweep alignment traces, and other complex wave-shapes encountered in TV servicing.

A direct-coupled push-pull, two-stage vertical amplifier with frequency-compensated and voltage-calibrated attenuators gives the "88" plenty of deflection sensitivity with a uniform frequency response maintained over the entire range of the attenuators. And sync action is exceptionally stable over the entire range of the 'scope.

You'll find such quality extras as – front-panel source of calibrating voltage, graph screen scaled directly in peak-to-peak volts, "plus" and "minus" sync, 60-cycle sweep with wide angle phasing control, special maintenance control adjustments accessible from outside of cabinet, high-impedance input, and many others in the new RCA "88".

Frequency Response (minimum values)

Vertical Amplifier	From 0 to 100 Kc	flat
	At 500 Kc	within –3 db
	At 1 Mc	within –10 db
	Rise Time	0.5 microsecond or better
Horizontal Amplifier	(reference frequency 1000 cps)	
	At 10 cps	within –1 db
	At 200 Kc	within –6 db

Deflection Sensitivity (minimum limits)	**Volts Per Inch** rms	p-p
Vertical Amplifier		
With WG-218 Direct Probe and Cable	0.025	0.07
With WG-216B Low-Capacitance Probe	0.25	0.7
Horizontal Amplifier	0.6	1.7
Calibrating Voltage	0.35	1.0

Input Resistance and Capacitance

Vertical Amplifier	
With WG-218 Direct Probe and Cable	1 megohm shunted by 75 $\mu\mu f$
With WG-216B Low Capacitance Probe	10 megohms shunted by 9.5 $\mu\mu f$
Horizontal Amplifier	
At Input Terminals	2.2megohms shunted by 55 $\mu\mu f$

Sweep-Circuit Frequency	(Four Ranges) 15 cps to 30 Kc
Tube Complement	1-6X4, 1-12AU7, 2-6AU6, 1-1V2, 2-12AT7, 1-5UP1
Power Supply	105/125 volts, 50/60 cps
Dimensions	9" w, 13½" h, 16½" d.
Weight	25 lbs.
Finish	Blue-gray hammeroid case, frosted-aluminum panel

$169.50 (Suggested User Price) complete with matched probes and cables, including the WG-216B Low-Capacitance Probe.

The columns for "travel miles and minutes" on the Daily Time Report are used to record the mileage which the serviceman covers between jobs, as well as the actual time spent traveling. For simplicity, "miles" should be entered to the nearest mile and travel "minutes" to the nearest 5 minutes.

The columns for "time," arrival and leave, are used to record the actual time he arrived on the job and the time he left. "Job time" again refers to the nearest 5 minutes or twelfth of an hour.

The totals of the entries for "travel time" and "job time" indicate the number of hours which he worked that day.

The "job status" column, which is used to "sum-up" the job by the serviceman, uses the "Job Status Codes" given in Figure 4.

The "collections" column is used to record any money collected for C.O.D. work; collections are coded to indicate money order—MO, cash—CA, or check—CH.

Any expenses incurred which are applicable to the jobs handled during the day, should appear on the pertinent service order and be listed under the column headed "expenses." These will include telephone calls, parking fees, bridge tolls, and other out-of-pocket expenses, and should be accompanied by a short identifying remark.

The other spaces to be filled in are:

1. "Mileage start" and "mileage finish" which are used to record mileage traveled in a company-owned vehicle or in the employee's personal car. The figure in total miles between these two entries should, of course, tally with the total mileage incurred on individual jobs.

2. Spaces for the serviceman's name, vehicle number, signature, and date, are self-explanatory.

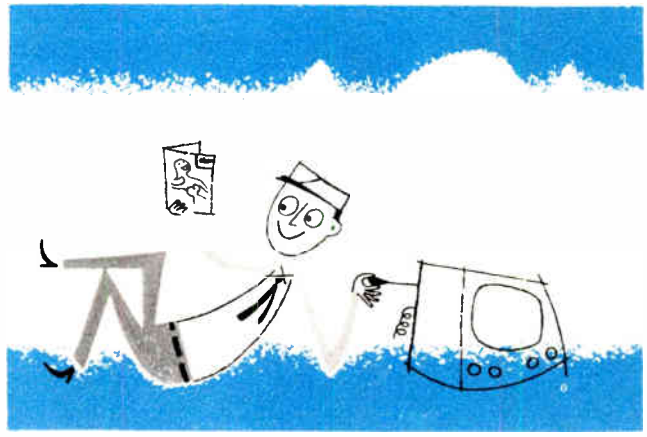
3. "Mileage expense" is used only if the serviceman is being reimbursed for using his personal car.

The "collections received by" space is reserved for the cashier or supervisor who checks the collections, signs for the money in this space, and thus relieves the serviceman of further financial responsibility.

The "approved by" space is signed by the owner or manager during check-in time at the end of the day, and signifies that entries for mileage, time, and overtime, are correct.

The Daily Time Report points out such factors, for example, as an excessive number of chassis returned to the shop which could have been serviced in the set owner's home and excessive time spent on repairing sets in the home or in antenna installation. These factors can have a detrimental effect on the profit picture.

The Daily Time Records may also indicate that a more efficient method of scheduling the calls is needed, as evidenced by



abnormal travel mileage and time. A number of "not-at-homes" may indicate improper scheduling when appointments are made.

This Daily Time Report or "DTR" can be tailored to suit the individual needs of each service organization, but basically it is a valuable tool in controlling the largest expense item—*Payroll.*

JUNIOR VOLTOHMYST△ WV-77A

DC Voltmeter

Ranges.....0 to 3, 12, 60, 300, 1200 volts
Input Resistance (With DC Probe), all ranges....11 megohms
Accuracy
With function selector set on "+VOLTS"±3% of full scale
With function selector set on "–VOLTS"±5% of full scale

AC Voltmeter

Ranges (rms).....0 to 3, 12, 60, 300, 1200 volts
Accuracy.....± 5% of full scale
Input Characteristics
3, 12, and 60-volt ranges....0.2 megohms shunted by 75 $\mu\mu f$
300-volt range.....1.0 megohm shunted by 50 $\mu\mu f$
1200-volt range.....2.0 megohms shunted by 50 $\mu\mu f$
Frequency Response*.....Flat within ± 1 db from 30 cps to 3 Mc.

Ohmmeter

Ranges, five.....0 to 1,000 megohms
Center-Scale Values.....10 ohms; 1000 ohms; 10,000 ohms; 1.0 megohm; 10 megohms

Power Supply.....105/125 volts, 50/60 cps
Tube & Battery Complement.....1-12AL5, 1-12AU7, 1-V5036
Dimensions.....8" h, 5⅜" w, 4½" d.
Weight.....4 lbs.
Finish.....Blue-gray hammeroid case

*On 3, 12 and 60-volt ranges with source impedance 100 ohms.

$47.50 (Suggested User Price) Complete with Probes and Cables.

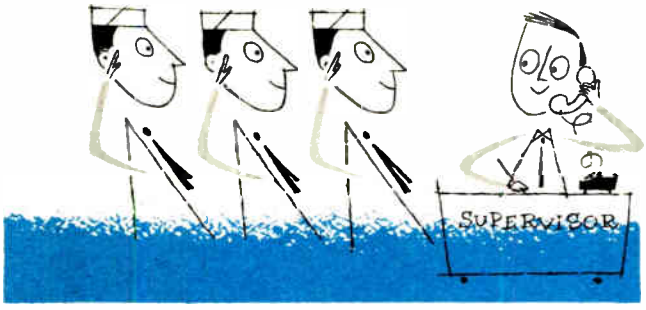
△Reg. U.S. Pat. Off.

Unquestionably the greatest value in all-electronic, ac-operated vacuum-tube voltohmmeters...the Junior *VoltOhmyst* provides versatility, accuracy, and dependability at low cost.

The WV-77A embodies all of the standard VoltOhmyst features such as high input resistance, low-input capacitance on dc functions, ability to measure dc in the presence of ac and vice versa, burn-out proof meter circuit, metal-case shielding against rf, ± 1% multiplier resistors, dc polarity reversing switch, negative feedback bridge circuit, zero-center scale, plus wide frequency response and extended voltage ranges, positive-polarity ohms probe for quick testing of electrolytic capacitors, and many other features.

Factory-built, factory-tested, and calibrated against the finest laboratory standards, the Junior VoltOhmyst is deserving of its popularity.

SUPERVISION



Adequate supervision is not only an important factor in obtaining maximum productivity in the larger service organization but it is also essential to the growth of the small service-business. The successful expansion of the one or two man service-shop is dependent on the owner's ability to assume new and varied responsibilities. In addition to the normal duties of operating his business, the owner must become proficient in directing the activities of additional employees—if the business is to have a healthy growth.

Regardless of the size of the organization a good supervisor will offer direction to his employees in the form of guidance, which the conscientious employee will appreciate.

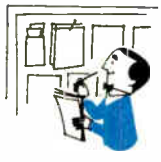
HERE ARE SOME OF THE DUTIES A GOOD SUPERVISOR WILL PERFORM

1 Assign the day's work to the servicemen, taking cognizance of any special conditions such as definite appointments or whether any unusual parts are needed.

2 Give council on problems of public relations, as well as on difficult technical matters.

3 Call on a sample number of customers whose receivers have been installed or serviced recently, check the completed jobs (installations) for performance, neatness, and general workmanship, both inside and outside the building. Find out whether the customer is familiar with the operation of the receiver, and solicit comments regarding the installation.

4 Join a serviceman, occasionally, while he is actually engaged on an installation or routine service call. Lend assistance, of course, but also note the technician's strong and weak points. At a later time, compliment the man on his strong points and advise him how to correct his weak points.



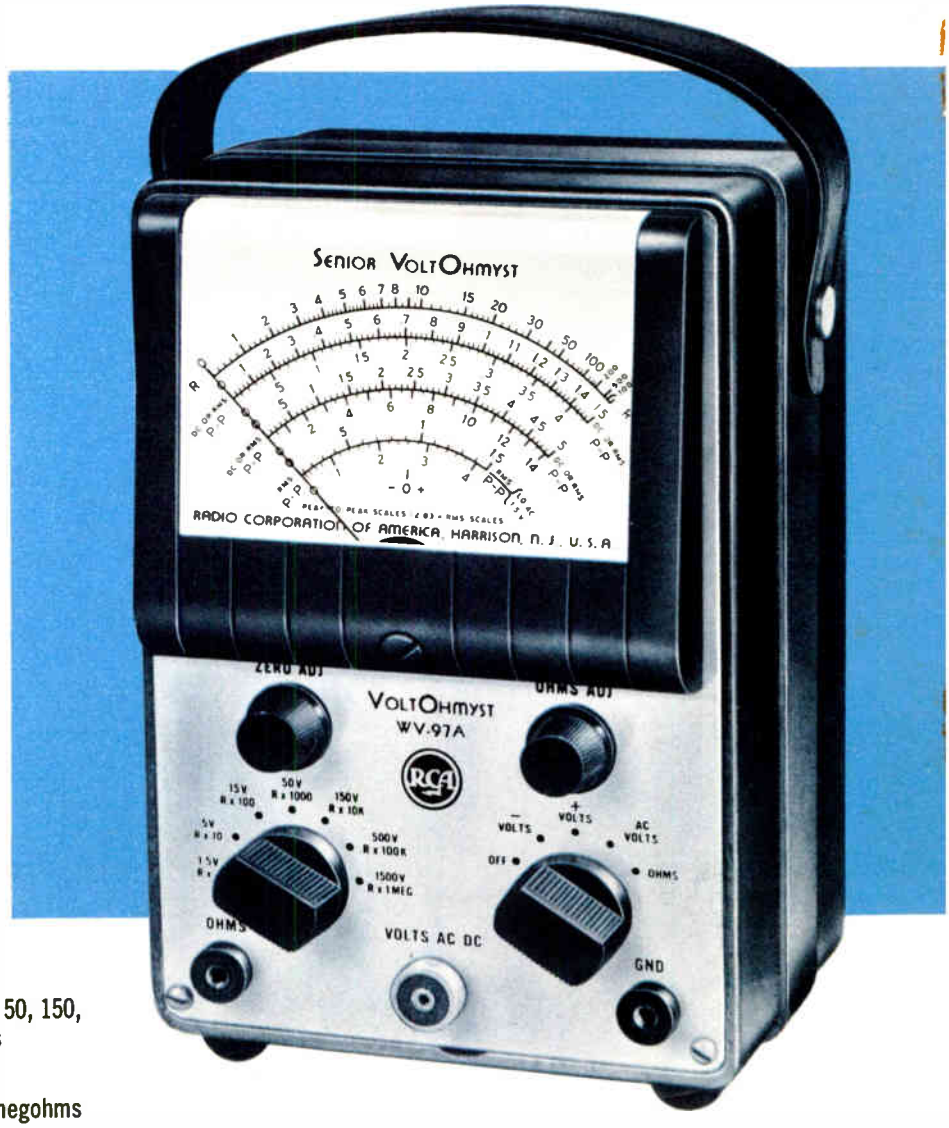
5 In a routine manner: (*a*) make sure all assigned job cards are returned; (*b*) make sure all jobs are properly coded and entered on the D.T.R.; (*c*) check cashiers receipt for all money listed on the D.T.R. and verify that all collections shown on the job cards are reported on the D.T.R.; (*d*) review time and material entries on job cards; sign the servicemen's requisitions for materials; (*e*) question abnormal or unclear entries on the job card or D.T.R.; (*f*) sign D.T.R.'s indicating correctness of each item; (*g*) approve material requisitions to the stockroom.

SENIOR VOLTOHMYST WV-97A

Especially useful as a television signal tracer, the WV-97A features a high-impedance, high-frequency, full-wave rectifier for direct readings of peak-to-peak voltages up to 4,200 volts. With this instrument, you can readily obtain quantitative measurements of practically all of the important complex-waveform voltages found in video, sync, and deflection circuits.

The WV-97A is a deluxe instrument having such refinements as *seven* non-skip ranges on all functions, uniform "3 to 1" ratio between scales, wide frequency range, and extended voltage range.

Like all RCA VoltOhmysts, it has high input resistance, electronic protection against burn-out, zero-center scale, molded plastic meter case, rugged 200 microampere meter movement, ± 1% multiplier resistors, and other outstanding VoltOhmyst extras.



DC Voltmeter

Seven Continuous ranges	0 to 1.5, 5, 15, 50, 150, 500, 1500 volts
Input resistance (including 1 megohm in DC Probe)	
All ranges	11 megohms
Sensitivity for the 1.5-volt range	7.3 megohms-per-volt
Over-all accuracy	± 3% of full scale

AC Voltmeter — Fourteen continuous ranges

Peak-to-Peak ranges	0 to 4, 14, 42, 140, 420, 1400, 4200 volts
RMS ranges (for sine waves)	0 to 1.5, 5, 15, 50, 150, 500, 1500 volts
Input resistance and capacitance with WG-218 Direct Probe and Cable	
1.5, 5, 15, 50, 150-volt ranges	0.83 megohm shunted by 70 $\mu\mu f$
500-volt range	1.3 megohms shunted by 60 $\mu\mu f$
1500-volt range	1.5 megohms shunted by 60 $\mu\mu f$
Frequency response (with WG-218 Direct Probe and Cable)*	
1.5, 5, 15, 50, 150, 500-volt ranges	flat from 30 cps to 3 Mc
Overall accuracy, all ranges	± 5% of full scale

Ohmmeter

Seven continuous ranges	0 to 1000 megohms
Center scale values	10, 100, 1000, 10,000 ohms; 0.1, 1, 10 megohms
Tube and Battery Complement	2-6AL5, 1-12AU7, 1-VS036
Power Supply	105/125 volts, 50/60 cps
Dimensions	7⅞" h, 5¾" w, 4½" d.
Weight	5½ lbs.
Finish	blue-gray hammeroid case, satin-aluminum panel

*For source impedance of 100 ohms

$67.50 (Suggested User Price) Including Direct Probe and Cable, DC Probe, Ohms Lead, and Ground Lead.

TRAINING

When it has been determined through analysis, that a technician has possibilities which justify additional training, he should be given special attention to improve his productivity. If he is slow in analyzing receiver troubles, but is expert in keeping customers satisfied, a week or ten days on the service bench, under the guidance of a good benchman, may give the training he needs. On the other hand, a man might be an excellent technician, but not a good diplomat—he would benefit by a week of "behind the counter" experience.

Owners and managers who started their careers as technicians realize that it is practically impossible for any one technician to be an expert in servicing all makes of TV sets. If a service organization establishes a policy of servicing "all makes" of sets, it must be prepared to accept the responsibility of training its technical personnel in the basic technical "know how" governing the proper operations and maintenance of these receivers, and also recognize the fact that labor time will be high on those brands not serviced daily by the technicians.

CUSTOMER RELATIONS

Although volumes could be written on this subject, we should like to discuss a few basic factors which definitely improve customer relations and directly affect the profit picture.

The serviceman is, in many cases, the only direct personal contact the customer has with the dealer after a purchase has been made. In most cases, this contact takes place when the customer is having trouble with the receiver he has purchased. The customer is dissatisfied, whether there is no real cause

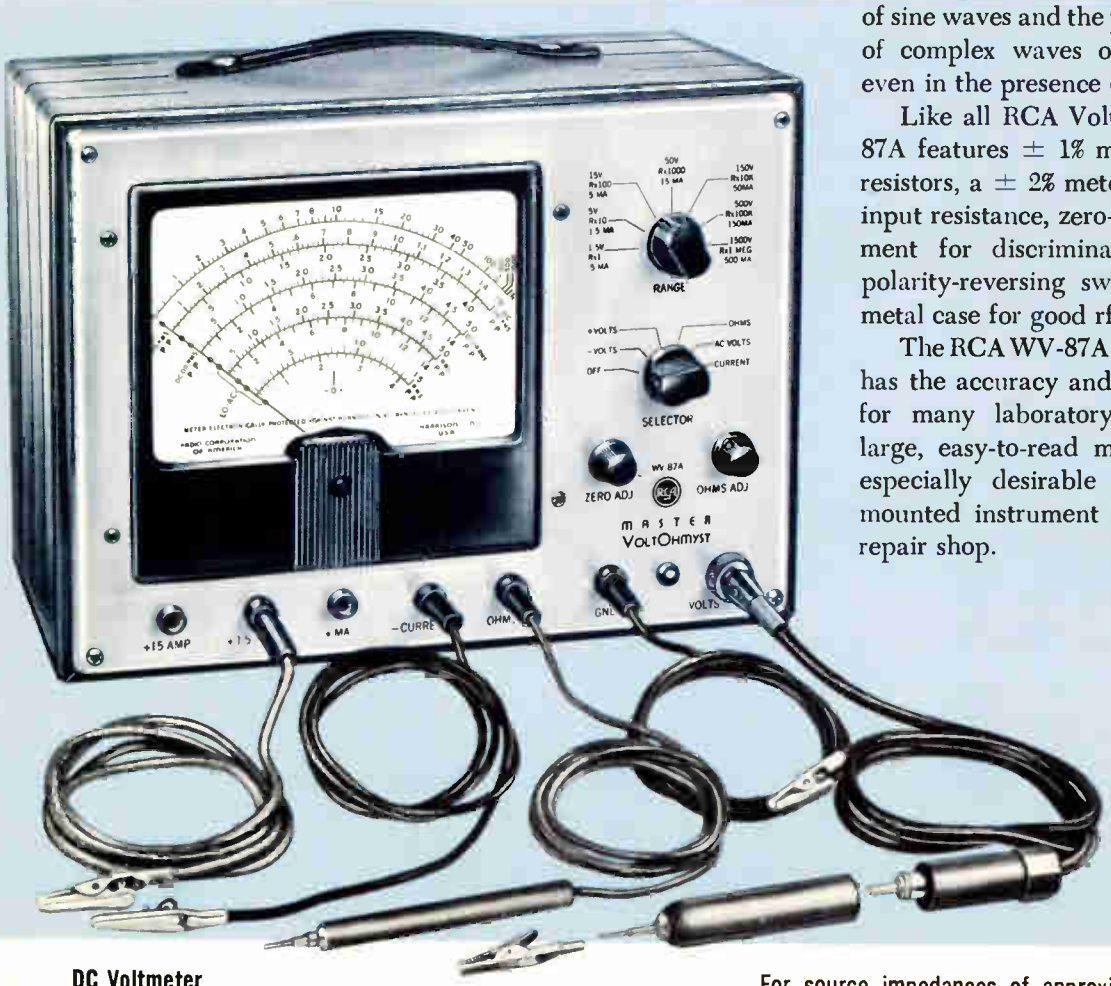
MASTER VOLTOHMYST WV-87A

Featuring a 7½" meter, the new WV-87A Master VoltOhmyst is the deluxe member of the RCA VoltOhmyst family. Its peak-to-peak scales are particularly useful for television, radar, and other types of pulse work.

The WV-87A measures dc voltages accurately in high-impedance circuits, even with ac present. It also reads rms values of sine waves and the peak-to-peak values of complex waves or recurrent pulses, even in the presence of dc.

Like all RCA VoltOhmysts, the WV-87A features ± 1% multiplier and shunt resistors, a ± 2% meter movement, high-input resistance, zero-center scale adjustment for discriminator alignment, dc polarity-reversing switch, and a sturdy metal case for good rf shielding.

The RCA WV-87A Master VoltOhmyst has the accuracy and stability necessary for many laboratory applications. It's large, easy-to-read meter also makes it especially desirable as a permanently mounted instrument in the factory and repair shop.



DC Voltmeter

Ranges	0 to 1.5, 5, 15, 50, 150, 500, 1500 volts
Input Resistance All Ranges	11 megohms
Sensitivity on 1.5-V Range	7.3 megohms/volt
Over-all Accuracy	± 3% of full scale

AC Voltmeter

Ranges	
RMS Values of Sine Waves	0 to 1.5, 5, 15, 50, 150, 500, 1500 volts
Peak-to-Peak Values of Sine Waves and Complex Waves	0 to 4, 14, 42, 140, 420, 1400, 4200 volts
Over-all Accuracy	± 5% of full scale

Input Resistance and Capacitance (With Direct Probe & Cable WG-218) 1.5, 5, 15, 50, 150, V Ranges . . . 0.83 meg. shunted by 85 uuf

Frequency Response (up to and including the 500-volt range) for Source impedances of approximately 100 ohms or lower ..... 30 cps to 3 Mc

For source impedances of approximately 1000 ohms or lower ..... 30 cps to 500 Kc

Ohmmeter

0 to 1000 Megohms in 7 Ranges: Rx1, Rx10, Rx100, Rx1000, Rx10K, Rx100K, Rx1Meg

Direct-Current Meter

Ranges, Nine	0 to 0.5, 1.5, 5, 15, 50, 150, 500 milliamperes; 0 to 1.5, 15 amperes
Overall accuracy	± 3% of full scale

Tube and Battery Complement	2-6AL5, 1-12AU7, 1-VS036
Power Supply	105/125 volts, 50/60 cps
Dimensions	10" h, 13-½" w, 7" d.
Weight	8 pounds
Finish	blue-gray hammeroid case, satin-aluminum panel

$112.50 (Suggested User Price) Complete with probes and cables, including: Direct Probe and Cable, DC Probe, Ohms Probe and Cable, Positive Current Lead, Negative Current Lead, Ground Lead.

for complaint (nuisance calls), or whether there is a real fault in the instrument. It is important, therefore, that the serviceman not only repair the instrument, but also engender satisfaction and confidence in the customer's mind. One of the best ways to establish satisfaction and confidence is to render "personal service". "Personal service" may very well begin at the time the service call is just received at the office. At this time, the customer should not be given the impression that he is "one of many" customers calling for service, and that he "must patiently wait his turn"; he should be received courteously and even "sympathetically." This "personal" treatment, along with a mutually satisfactory servicing appointment, will, in almost every case, leave the customer with the impression that his case is being given "special handling."

Once the customer is in the right frame of mind the serviceman is in a position to "sell" the customer and keep him sold on your service. It is important that every member of your organization fully understands the basic confidence that is quickly translated into good business and good profits.

Below are listed some "DO's and DON'Ts", which, if observed by the technician in his relations with the customer, should contribute substantially toward building good will and future business.

"DO's"

1. **Always be neat and clean shaven.**
2. **Introduce yourself by name and explain your visit.**
3. **Enter only after being invited. Be sure someone remains in the house with you.**
4. **Be courteous and friendly—but don't overdo it.**
5. **Be a good listener—let customer "blow-off steam."**
6. **Answer all questions courteously.**
7. **Be diplomatic in correcting customer's misunderstandings.**
8. **Obtain permission before using customer's phone.**
9. **Prove all your repairs by actual demonstration in presence of customer.**
10. **Clean up set, and any debris before leaving.**
11. **Politely refuse any offer of alcoholic beverages.**
12. **Follow through on any necessary rescheduled work.**

"DON'Ts"

1. **Never argue with a customer.**
2. **Don't speak disparagingly of the last service job performed on the set.**
3. **Don't be a "bull in a china shop." Be careful of customer's property.**

UHF SWEEP GENERATOR WR-41B

Sweep Oscillator

Frequency Range (Continuously variable)	Center frequencies from 470 to 890 Mc
Sweep Width (Continuously variable)	45 Mc Max.
Accuracy of Dial Calibration	within ± 10 Mc

Output System

Attenuator	Type	Waveguide-below-cutoff
	Range	100 db
Impedance		50 ohms
Output Voltage (Across 50-ohm load)		at least 0.5 volt
Amplitude Variation (For sweep width up to 45 Mc)		0.1 db/Mc Max.

Tube Complement	1 6AV6, 1 6X4, 1 5675
Power Supply	105/125 volts, 50/60 cps
Dimensions	13" w, 12" h, 9" d.
Weight	30 lbs.
Finish	Dark, cobalt-gray hammeroid

$595.00* **includes WG-227 rf-output cable and WG-224 300-ohm matching pad.**

Available accessories:

$8.00* WG-223,
Matching Pad (50 to 75 ohms)

$8.75* WG-225,
UHF Absorption Trap (450 to 750 Mc)

$8.75* WG-226,
UHF Absorption Trap (600 to 900 Mc)

$40.00* WG-228,
Mounting Plate (for UHF traps)

(*Suggested User Price.)

Favored by the TV receiver manufacturers for production-line testing of UHF receivers and converters, the WR-41B is a fine instrument for the better service shops. Its range of applications includes sweep-alignment and testing of tuners, filters, and transformers; and standing-wave measurements on transmission lines and antennas.

The WR-41B provides fundamental oscillator output over its entire frequency range. The signal source is a "pencil" triode in a cylinder-type oscillator circuit. Other quality features include hand-calibrated dial, extreme flatness of output, extra-wide sweep, and return-trace blanking.

4. **Avoid arguments or technical discussions with helper in presence of customers.**
5. **Leave no doubts regarding performance after repair.**
6. **Don't "knock" competitors.**
7. **Don't tackle a job beyond your own capabilities to complete. Call the shop for advice first.**
8. **Don't make "wild" promises to save face.**
9. **Don't be a "self-styled" expert—keep your explanations simple and to the point.**
10. **Do not accept "tips" or gratuities from customers.**

FIG. 5

Additional aids in building customer good will, as well as in reducing operational costs, are: (1)—a "Not-at-Home" card, and (2) a "Service Tag."

The "Not-at-Home" card (sample shown in Figure 5) is left at the customer's house when the customer is not at home. The card gives the time and date the serviceman called, and asks the customer to call the service shop for a new appointment. This card not only impresses the customer with your "good intentions" but reduces the likelihood of additional follow-up phone calls, although the latter may be advisable if the customer does not call within a reasonable length of time.

The use of the "Service Tag" has several advantages. After explaining the purpose of the "Service Tag" to the customer, your serviceman attaches it to an accessible place on the back of the TV set either during the original installation or during the first service call. As shown in Figure 6, the Tag contains your address and 'phone number, as well as some simple checks which the customer is asked to make before placing a call for service. These checks prevent the majority of

FIG. 6

TV ISOTAP WP-25A

speed up your servicing

. . . use the RCA TV Isotap to avoid wasted time and uncertainty in TV trouble-shooting. Use the 500-va autotransformer winding for testing power transformer types of TV receivers. Use the 275-volt ampere isolated secondary winding for testing transformerless types of TV and ac-dc radio receivers.

Service sets at normal line voltage for quick check of circuit voltages — break down intermittent components by operating set at extra-high line voltage — make sure set functions satisfactorily at low-line voltage.

prevent damage to your test equipment

. . . use the RCA TV Isotap to avoid expensive damage to your valuable test equipment. Eliminate possibility of crossed line plugs on transformerless receivers and test equipment and prevent costly short circuits.

minimize shock hazard

. . . use the RCA TV Isotap to avoid the shock hazard in servicing transformerless types of radio and TV receivers. WP-25A provides complete isolation and greatly minimizes shock hazards.

cut down costly returns

. . . by using the RCA TV Isotap to avoid service recalls which are often caused by a difference of line voltage in the customer's home. With the WP-25A you can check the set in the shop at high, medium, and low-line voltages.

Supply Line

Voltage Range	105-130 volts
Switch positions	105, 110, 115, 120, 125, 130, OFF
Frequency	50-60 cps

Output Voltages

Direct receptacles (with 500 max va load and selector set to value of supply-line voltage)

LOW	105 volts
MED	115 volts
HIGH	130 volts

Isolated receptacles (with resistive load of 275 max va and selector set to value of supply-line voltage)

LOW	105 volts
MED	115 volts
HIGH	130 volts

Load Ratings (40° C Ambient)

Continuous operation	Direct receptacles	500 va max
	Isolated receptacles	275 va max
Intermittent operation	Direct receptacles	750 va max
	Isolated receptacles	450 va max

Regulation (no load to full continuous load)

Direct receptacles	approx. 1.5 per cent
Isolated receptacles	approx. 6 per cent

Dimensions	5¾" h, 5" w, 4⅜" d.
Weight	12 lbs.
Finish	Dark cobalt, gray lacquer

$17.95 (Suggested User Price)

MAKE PAYMENT TO:

Radio-TV Service, Inc.

415 SOUTH 5th STREET • HARRISON, N. J.

INVOICE NUMBER

DATE

BILL TO:

WORK PERFORMED AT:

PLEASE DETACH THIS PORTION AND RETURN WITH YOUR REMITTANCE

THIS IS YOUR INVOICE **RADIO-TV SERVICE, INC.** PHONE 5-3900

SUMMARY OF WORK PERFORMED:

SUMMARY

MATERIAL $

LABOR AND EXPENSE

TOTAL CHARGES DUE C.O.D. $

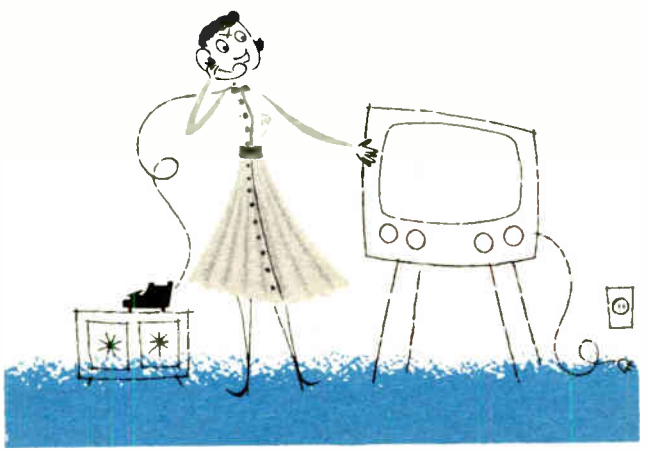
PAYMENT RECEIVED BY	AMOUNT RECEIVED $	DATE PAID	INVOICE NUMBER

RCA *We use and recommend RCA Tubes, Parts, Batteries and Test Equipment*

FIG. 7

"nuisance" calls from developing, and at the same time build good will and reduce operational costs.

Another very useful form is the "Double Invoice". Although every effort should be made to collect all "C.O.D." charges when service work is completed, it should be recognized that this is not always possible with certain customers such as clubs, schools, and other institutions, which, due to their organizational set-up, are unable to pay cash on demand. In these cases, it is desirable to leave an invoice with the person in charge. The duplicate of this invoice is then turned in to the service shop with the signed service order for follow-up billing, if necessary. If, however, payment is made upon completion of the work, the lower portion of the form can be detached to serve as a customer receipt. A sample of this 2-way invoice is shown in Figure 7.



RADIO BATTERY TESTER WV-37A

Nine prefixed switch positions for testing popular portable-radio-type batteries

Rugged, easy-to-read, 4½" meter, all metal case, ± 2% meter movement

Built-in load circuits provide "in-use" testing conditions

Double meter-scale simultaneously indicates percentage of rated battery voltage and relative "good"... "useable"... or "replace" condition.

Extra positions for adaption of tester to new or different battery types ... prevents obsolescence.

Now you can test portable-radio batteries under actual load or "turned-on" conditions without the necessity of placing batteries in the set. The RCA WV-37A's built-in load circuits eliminate the time-consuming method required to test batteries with the conventional voltmeter. And the RCA WV-37A also gives you a more accurate indication of true battery voltage than does the conventional voltmeter alone.

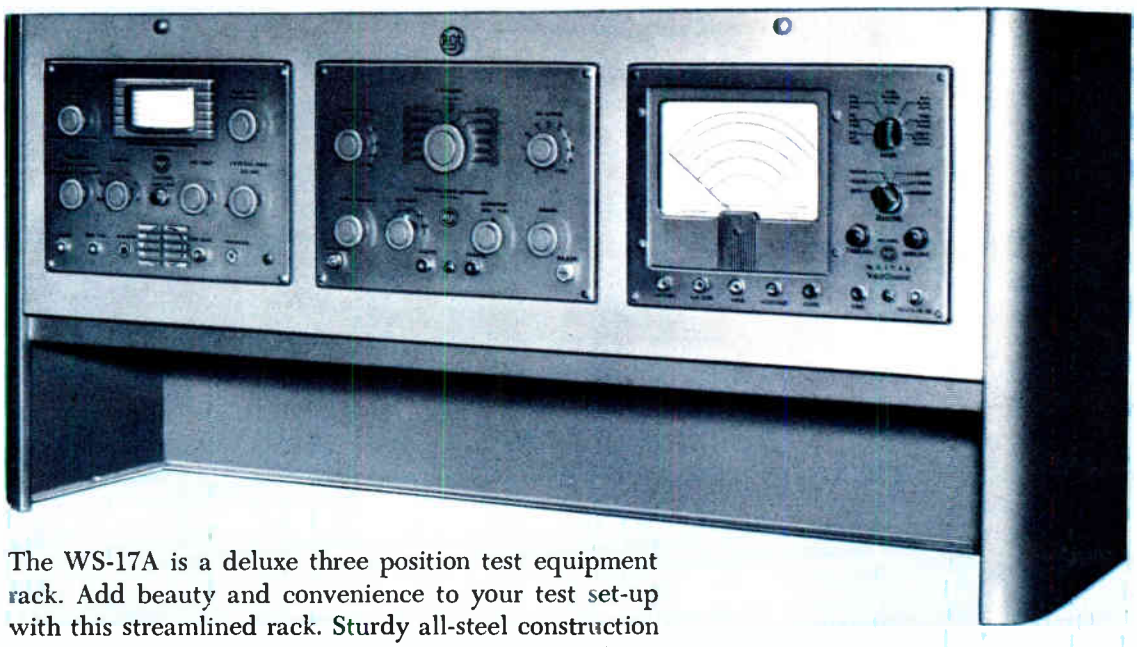
The selector switch on the front panel has nine prefixed positions to accommodate popular portable-radio batteries ranging from 1.5 volts to 90 volts. Eight blank test positions are provided to enable you to set up testing conditions of your own choosing for testing additional battery types.

Red and black plastic test prods joined to 36-inch test leads are permanently attached to the tester. Weighing less than 3½ lbs. the WV-37A measures a full 9½" long, by 6" wide, by 1½" deep.

You'll find the new RCA WV-37A Radio Battery Tester a worthy addition to your service shop. Use it on the sales counter for checking used batteries or assuring the customer that replacement stock is fresh ... on the service bench for accurate battery voltage indication under normal load conditions – on shelf stock to keep a "running-check" on the condition of your shelf battery stock.

$24.95 (Suggested User Price)

DELUXE RACK WS-17A



The WS-17A is a deluxe three position test equipment rack. Add beauty and convenience to your test set-up with this streamlined rack. Sturdy all-steel construction with attractive satin-aluminum and blue-gray hammeroid finish. **$59.50** (Suggested User Price)

TEST EQUIPMENT

One very important factor in obtaining high productivity and quality workmanship is test equipment. The shop must have adequate equipment and the technicians must be thoroughly trained in its application.

No service organization can operate profitably for long without up-to-date reliable test equipment. The serviceman, no matter how well learned in theory is at a distinct disadvantage if he is hampered by outmoded and unreliable tools of his trade.

In addition to creating customer confidence and respect, which always results in "plus business", good test equipment saves valuable time for your technician and enables him to be more productive. With good test and measuring equipment, you can accept and complete more work, inspire increasing customer satisfaction and good will, and achieve greater profits through higher volume and increased efficiency.

With the advent of UHF, it has become more important than ever for you to review your test equipment facilities *NOW* and take immediate steps to provide adequate equipment for your present needs, as well as to prepare for future business in new electronic fields.

SPECIAL PURPOSE PROBES

LOW-CAPACITANCE PROBE WG-216B

The WG-216B is a "slip-on" type probe, designed for use with either the WG-218 or WG-220 Direct Probe in conjunction with an oscilloscope. When the WG-216B is used with either the RCA WO-56A or WO-88A oscilloscopes, the total input resistance is 10 megohms shunted by a capacity of less than 10 $\mu\mu f$. **$7.00***

DC PROBE WG-217

The WG-217 is a "slip-on" type probe, designed for use with either the WG-218 or WG-220 as a DC Probe for VoltOhmysts or other types of voltohmmeters. The WG-217 contains a 1-megohm isolating resistor, and has a shunt capacitance of less than 2 $\mu\mu f$. **$2.75***

DEMODULATOR PROBE WG-291

The WG-291 Demodulator Probe has an input range of 500 Kc to 250 Mc with an input capacitance of only 2.25 $\mu\mu f$. It separates the modulation from the RF carrier in an amplitude-modulated wave by means of a rectifier and a filter having a short time constant and an output frequency range of 30 to 5,000 cps. The WG-291 has a maximum input voltage of 20 rms volts and a maximum dc voltage rating of 250 volts. **$7.95***

DC/DIRECT PROBE WG-222

The WG-222 is a "slip-on" type probe with a built-in 1-megohm isolating resistor and a unique switching facility. By virtue of the switch arrangement, it is possible to measure dc or resistance, without changing probes. The WG-222 slips on the front of either the WG-218 or WG-220 and may be used with VoltOhmysts or other vacuum-tube voltmeters requiring a 1-megohm isolating resistor. **$3.50***

DIRECT PROBE AND CABLE WG-218, WG-220

The WG-218 is a shielded input cable for use with volt-ohmmeters and oscilloscopes. It is fitted with a probe tip at one end and a microphone-type connector at the other end for connection to instruments having microphone-type cable connectors. The WG-220 is the same electrically as the WG-218 but is fitted with pin-plug tips for connection to instruments having tip jacks or binding posts. Either Probe **$3.75***

CRYSTAL-DIODE PROBE WG-264

The WG-264 Crystal-Diode Probe consists of a germanium rectifier and RC network in a plastic housing . . . which conveniently slips on the Direct Probe of VoltOhmysts, such as the WV-97A. RF voltages at frequencies up to 250 Mc may be accurately measured with the WG-264. The ac voltage range extends from 20 millivolts to 20 volts rms; dc voltages up to 250 volts can be present. **$7.75***

(*Suggested User Price)

MATERIALS

An adequate supply of replacement parts should always be maintained if prompt and efficient service is to be rendered. Valuable time is lost on the bench and in the field, if proper replacement parts and tubes are not available.

Your "outside" or field serviceman should be supplied with a kit of the tubes, parts, and tools which he needs to make repairs efficiently. An adequately filled kit will reduce the number of chassis brought back to the shop, as well as decrease the number of unnecessary call-backs because of insufficient materials on the initial service-call. The schematic diagrams and service notes for each receiver in repair should also be supplied, since it is almost impossible for the average serviceman to work in the field or on the bench without them. Tube and Parts distributors usually stock books containing service notes and schematics of all makes of TV sets.

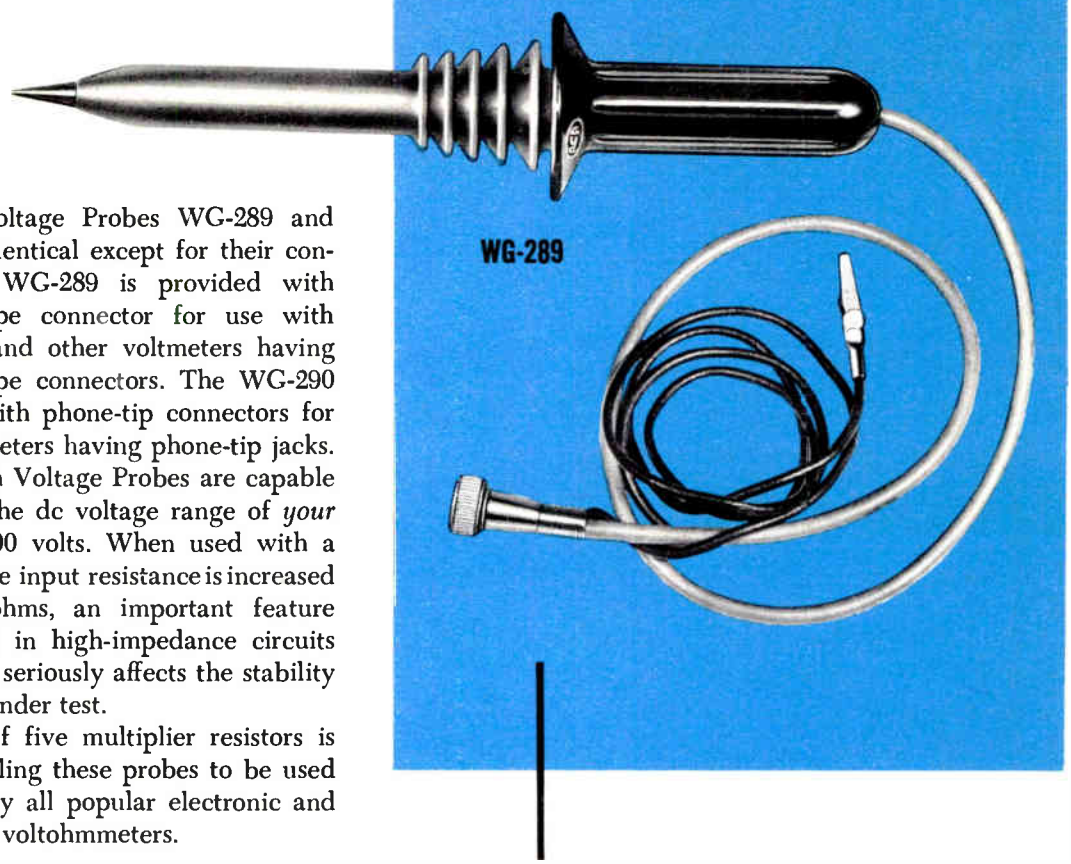
STOCK CONTROL

Proper control of stock is important. Even the smallest shop maintains some sort of a stock-room and should have a sound method of stock control. The following suggested method can be adapted to service departments of all sizes. A stock card kept in a permanent file cabinet should be made out for each item carried in stock, including tubes. The card should include columns for posting additions to stock, usage, and balance on hand, and can serve as a perpetual inventory. A sample stock card shown in Figure 8, is self-explanatory.

If, as mentioned earlier, your serviceman is provided with a complete kit containing the parts and tubes necessary to give efficient service on the jobs assigned to him, part of the stock must be considered as being "in kit". The items classified as "in kit" are actually part of the stock proper until they are used, and should be included on each stock card under the heading of "in kit".

As often happens, a serviceman may anticipate the need for a certain part which is not included in his normal kit. He should be encouraged to draw this item from the stock room on a temporary basis, and be required to sign a simple receipt for it. If the tube or part is used, he will indicate this on the job card, and advise the stock clerk, who,

HIGH VOLTAGE PROBES WG-289, 290



RCA High Voltage Probes WG-289 and WG-290 are identical except for their connectors. The WG-289 is provided with microphone-type connector for use with VoltOhmysts and other voltmeters having microphone-type connectors. The WG-290 is equipped with phone-tip connectors for use with voltmeters having phone-tip jacks.

These High Voltage Probes are capable of extending the dc voltage range of *your* meter to 50,000 volts. When used with a VoltOhmyst the input resistance is increased to 1000 megohms, an important feature when working in high-impedance circuits where loading seriously affects the stability of the circuit under test.

A choice of five multiplier resistors is available enabling these probes to be used with practically all popular electronic and non-electronic voltohmmeters.

WG-206	1090 megohms
WG-207	991 megohms
WG-208	400 megohms
WG-209	480 megohms
WG-210	900 megohms

$7.15 (Suggested User Price) Either Probe Only

$2.80 (Suggested User Price) Resistor Only

Low-Loss, Polystyrene Body—9" Leakage Path to Ground

Anti-Corona Probe Tip

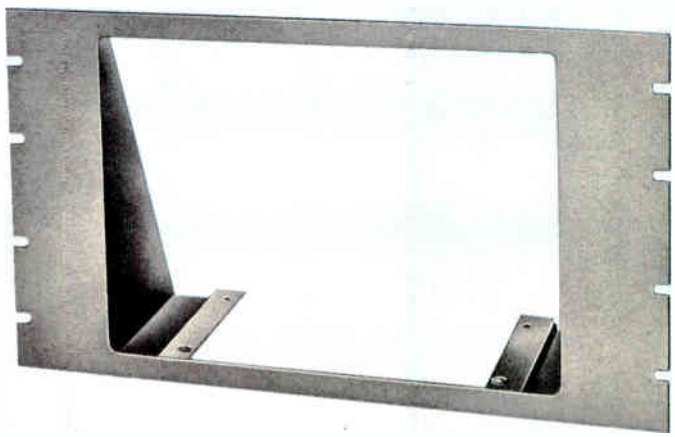
Grounded Arc-Over Protection Baffle

Completely Insulated Grip . . . No Metal Touches Hand

Multiplier Resistor Completely Enclosed Within Probe Body

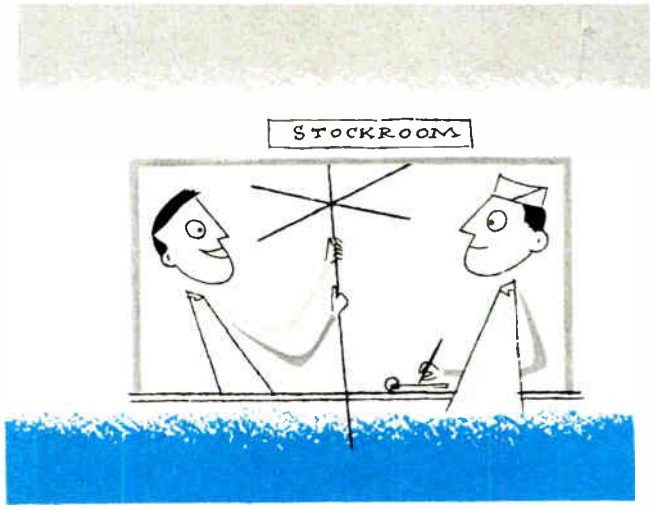
Fully Shielded Cable and Separate Ground Lead

RACK-ADAPTER PANEL WS-18A



The WS-18A Rack Adapter Panel may be used for mounting any of the matched RCA Test Instruments in standard 19" relay racks. Add convenience, standardization and the professional touch to your test bench set-up. Umber-gray finish, all steel construction.

$11.50 (Suggested User Price)



PART NO.	DESCRIPTION	NORMAL STOCK DAYS	OVERSTOCK - POSTED QUANTITY	DATE

DATE	ORDER NUMBER	ORDER QUANTITY	DATE QUAN. REC'D	DISBURSEMENTS DATE	DISBURSEMENTS USAGE	DISBURSEMENTS OTHER	USAGE Mo.	USAGE	BALANCE STOCK	BALANCE KIT	TO
							J				
							F				
							M				
							A				
							M				
							J				
							J				
							A				
							S				
							O				
							N				
							D				

FIG. 8

DATE	STOCKROOM RECEIPT		
MATERIAL DUE FROM		MATERIAL DUE TO	
TEMPORARY CHECK OUT		ADD TO KIT	OUT OF STOCK

QUANTITY	STOCK No.	DESCRIPTION	JOB No.

APPROVED BY:

FIG. 9

after returning the technician's receipt, will post this item on the respective stock card as having been used. If the item is not used, it should be returned to the stockroom within a specified time, and placed back in stock. The stockman should maintain a list of items issued on a temporary basis, posting it in a prominent place and referring to it daily, as a follow-up to minimize inventory losses.

A sample "stock-room receipt", shown in Figure 9, illustrates how control over temporary check-outs can be maintained. In addition to listing temporary check-out items, this receipt may also be used by the stockman when he replaces a regular item in the serviceman's kit. If the item is temporarily out of stock, the receipt becomes an "I.O.U." from the stockman to the serviceman, allowing both to keep a record of the transaction. When the serviceman fills in the job number on which the part was used, a useful cross reference is provided which serves as an added control.

It is quite obvious, from the nature of his duties, that the stockman is a key man in any servicing organization (in the smaller organization, he may be the owner). In any event, he should be qualified to (1) master a simple bookkeeping system; (2) use good judgment in ordering material; (3) control ordering to minimize obsolescence or losses due to price declines.

REDUCING OTHER OPERATING COSTS AND

Although the greater portion of this discussion thus far has been devoted to reducing your service costs, it has, of necessity, centered around two major factors; namely, internal operation and the productivity of the technician.

The original installation of a new customer's antenna, which is actually the "opening" of another potential servicing account, is also costly, and some serious thought should be given to this important phase of operations.

It has been a more or less common practice for servicing organizations to employ two men, working as a team, to install a television antenna. This method may be justified to some extent in fringe areas where poor reception of TV signals dictates the use of elaborate towers, extra high masts, and double-stacked arrays. However, in the majority of present television markets, the use of two-man teams may be unnecesary. It has been proved that one installer, properly equipped with up-to-date tools and installation materials, can efficiently perform the work of a two-man team, maintain reasonable productivity and thereby contribute to decreased labor cost.

One of the biggest objections to the use of a one-man installer has been the alleged inability of one man to quickly and properly orient an antenna. This objection can be eliminated by the use of an antenna rotator and control box. There are several types of antenna rotators on the market which are readily adaptable for orientation of television antennas during installation. This device eliminates the need for two men using soundpower 'phones or shouting from the roof to the living room.

In areas where the location of the television transmitters warrant their use, the sale and installation of the antenna rotator has proven to be a profitable one. When the serviceman is using the rotator to orient the antenna, he has an excellent opportunity to demonstrate, and possibly sell, such a unit to the customer before the installation is completed.

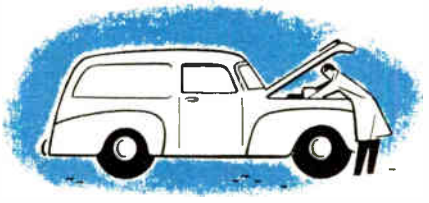
Another "objection" to using one installer is based on the safety factor. Contrary to the common belief that one installer has a more hazardous job than a two-man team, a check of insurance company records has revealed that the accident rate for a single installer is drastically less than for a two-man team. One man, realizing he is working alone, is not likely to take unnecessary chances and he is not subject to the "false sense of security" which two-man teams may develop.

By using one man for an installation, a service organization is much more flexible. One man, properly equipped, can install antennas for new customers, repair troubles in sets of old customers, or be used in many combination-type calls. The use of this "multi-purpose" serviceman is not only economical, but eliminates the need for costly antenna recalls after the installation man has finished his job.

EXPENSES

Under the heading of operational expenses trucks must be included. The cost of truck operation and depreciation, always a sizable factor in television servicing, can be kept to a minimum if the three following points are observed:

Employ preventive maintenance



It is much less expensive to have trucks properly serviced by a competent mechanic on a regular basis than to wait for mechanical failures to develop and pay for them on an emergency basis. By checking trucks periodically for poor brakes, clutch, lights, carburetor adjustments, etc., preventive repairs may be made without the sacrifice in time and money which inevitably accompany major breakdowns. The appearance of trucks is also very important from a customer-relations and advertising standpoint. Every effort should be made to keep them clean (inside and out) and free from unsightly dents and scratches.

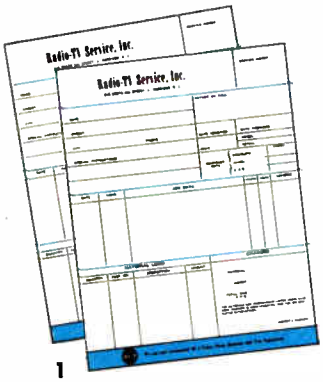
Control mileage expense of trucks

Truck mileage expense refers to the cost of gasoline, oil, tires and normal depreciation through use. If these expenses are controlled through efficient scheduling of work and proper supervision, they will be held to a minimum and the productivity of the technician will be increased.

Reduce vehicle accidents

An active safety program, such as has been outlined by a number of insurance companies, can help keep the number of vehicular accidents to a minimum. Incentive measures, including cash or merchandise awards, and extra days off for drivers having no accidents for a definite period, are very effective.

This booklet, as previously stated, is not intended to provide the solution to all problems facing the TV servicing business. It is hoped, however, that by calling attention to some of the factors affecting profitable operation, and by suggesting several satisfactorily proven methods of improving them, this discussion will help you to make your business a highly profitable enterprise and give you the satisfaction of having an organization you can be proud of.

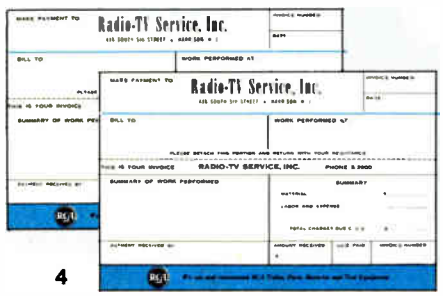


1

Business Forms . . . to help you

2

3



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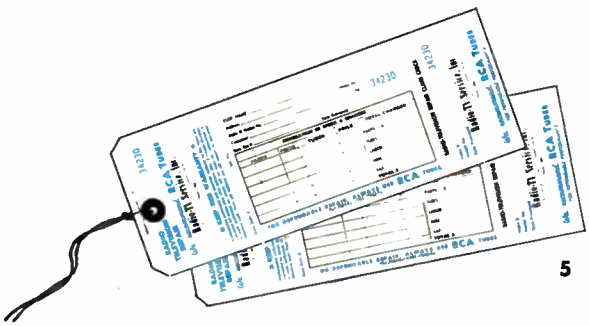


5

1 SERVICE ORDERS

2-colors. Imprinted with dealer name, address and phone number.

FORM 2F773.....8½" x 11" Price on Request

2 "NOT-AT-HOME" CARDS

2-colors. Imprinted with dealer name, address and phone number.

FORM 2F774.....3¼" x 5½" Price on Request

3 SERVICE TAGS

2-colors. Imprinted with dealer name, address and phone number.

FORM 2F775.....5¼" x 2⅝" Price on Request

4 DOUBLE INVOICES

2-colors. Imprinted with dealer name, address and phone number.

FORM 2F776.....8½" x 5½" Price on Request

5 REPAIR TAGS

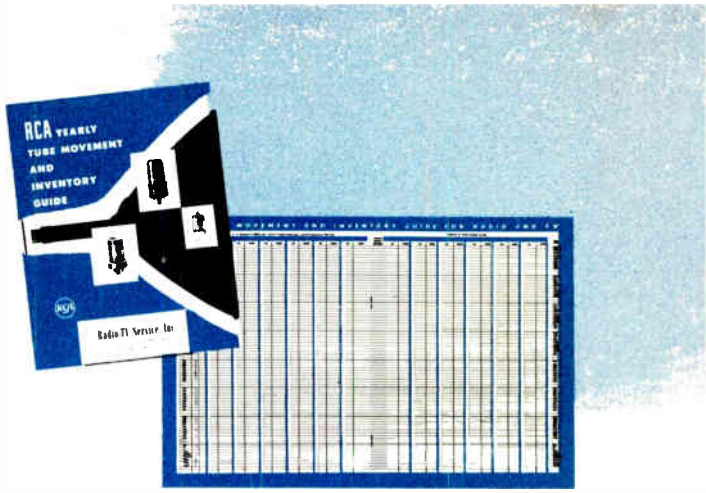
In 3 perforated sections, with customer receipt, job identification, and service record sections. Imprinted on two sections with dealer name, address and telephone number. Complete with strings attached, and all three sections numbered!

FORM 2F687R 1000/6.42

6 TUBE MOVEMENT AND INVENTORY GUIDE

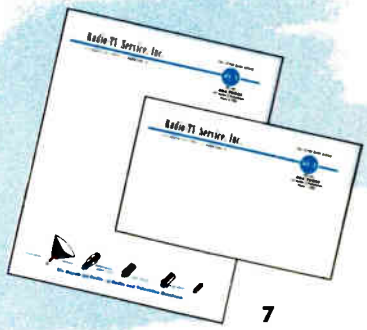
Here's a unique guide that helps to eliminate your inventory-order headaches and guards against indiscriminate "Tube-pulling" replacing conclusive trouble-shooting: RCA's 16-page TUBE MOVEMENT AND INVENTORY GUIDE.

With this guide, you will see, at a glance how many of each tube type you sold last month, how this month's sales compare with sales of previous months, how to determine your normal stock by tube type, how many of each type to order, for a balanced inventory. Be sure to order your copy (it's free) from your RCA Distributor. It's a vital business builder that lasts a full year.



6

operate at peak efficiency!



7

7 LETTERHEADS

2-colors. Imprinted with dealer name, address, telephone number and 8-word slogan.

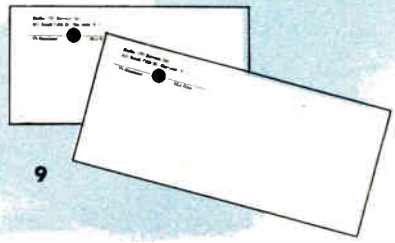
FORM 2F802	8½" x 11"	250/1.70 500/2.25 1000/3.50
FORM 2F805	5½" x 8½"	250/1.30 500/1.50 1000/2.50

8

8 BILLHEADS

2-colors. Imprinted with dealer name, address, telephone number and 8-word slogan.

FORM 2F814	5½" x 8½"	250/1.30 500/2.00 1000/2.75



9

9 BUSINESS ENVELOPES

1-color. Imprinted with dealer name and address.

FORM 2F808	4¼" x 9½"	250/1.60 500/2.10 1000/3.70

1-color. Imprinted with dealer name and address.

FORM 2F811	6½" x 3¾"	250/1.20 500/1.70 1000/2.80

10 BUSINESS CARDS

2-colors. Imprinted with dealer name, address and telephone number.

FORM 2F817	500/1.60 1000/2.25

10

11 SERVICE GARMENTS

(Specify height, weight, sleeve length.)

1F9985	Shop Service Coat (white)	See Your RCA Tube Distributor
1F99986	Counter Service Jacket (white)	

Nickname on pocket—FREE. To have firm name put on back of your garments, up to maximum of 25 letters at 5¢ per letter, ask your RCA Distributor to include this information in his order.

11

RCA Tubes, Parts, Batteries and Test Equipment

... for all your Radio-TV servicing needs