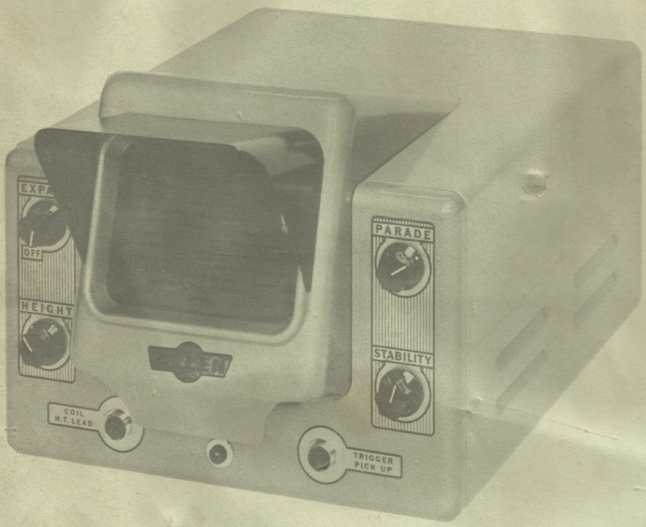
OPERATING INSTRUCTIONS

ALLEN SCOPE
MODEL 10-06

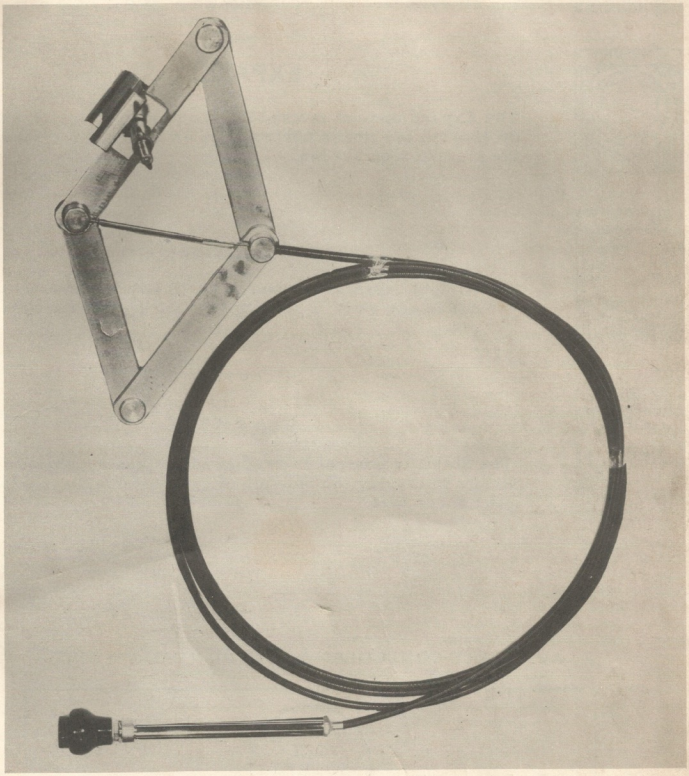
ALLEN

Allen Electric and Equipment Company
Kalamazoo, Michigan

PRINTED IN U. S. A.


EXP.
OFF
HEIGHT
PARADE
STABILITY
COIL
H.T. LEAD
TRIGGER
PICK UP

ACCESSORIES AVAILABLE
FOR USE WITH MODEL 10-06



MODEL 22-03 THROTTLE CONTROL

The Allen Universal Throttle Control gives you complete remote control of engine speed. With this tool you can advance or retard the throttle instantly or adjust and hold it at any engine R.P.M. with precise accuracy. A push button release built into the handle enables you to instantly return engine speed to normal idle... the aircraft type control cable is 12 1/2 feet long, reaching easily to any part of the vehicle for one man operation.

FUNCTION OF CONTROLS

PARADE

The Parade control is used in conjunction with the Expand control to horizontally position the traced image for viewing all cylinders or positioning a single cylinder pattern.

EXPAND

The Expand control is used to turn power on and lengthen or shorten the image horizontally as it is being traced on the picture tube screen.

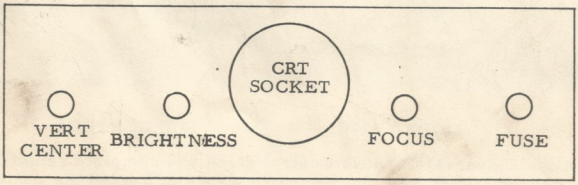
HEIGHT

The Height control is used to vertically lengthen or shorten the image as it is being traced on the picture tube screen.

STABILITY

The Stability control is used to adjust and synchronize the image to display the number of cylinders relative to the engine under test.

AUXILIARY CONTROLS - LOCATED REAR OF UNIT



POWER REQUIREMENTS

Connect to AC outlet in accordance with voltage and current requirements as shown on unit nameplate. Use adapter furnished if AC outlet has provision for 2 prong plug only.

Adapter is not furnished for Canadian use.

CONNECTIONS FOR PRIMARY TESTS

Connect the special clips on the ends of the coil H. T. Lead and Trigger Pickup Lead, together and connect to the Coil Primary Terminal. Connect the plain clip leads to a good ground. See Figure 1.

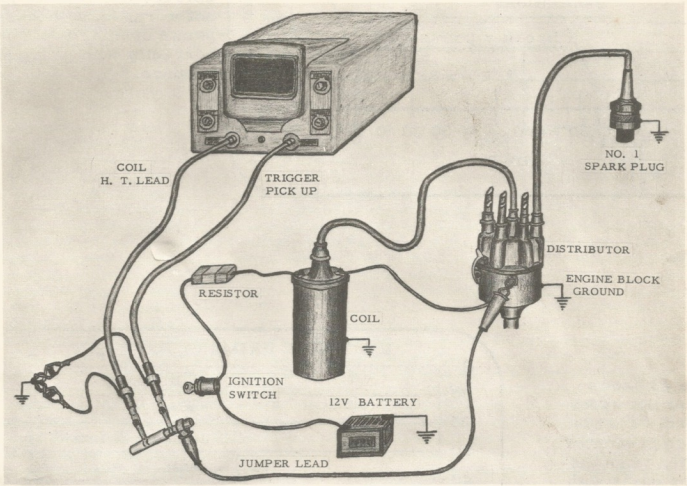


Figure 1

OPERATING PROCEDURE

Turn the "EXPAND" control clockwise to turn the Scope on.

Start engine and adjust the speed to 1000 RPM. A suitable electric primary operated tachometer should be used to adjust engine speed so that the tachometer leads may be disconnected without stopping the engine.
NOTE: A tachometer when left connected to the ignition circuit, will cause abnormal scope patterns.

Turn EXPAND Control fully counter clockwise.
Turn Stability Control fully clockwise.
Adjust "PARADE" control to position LEFT END of pattern to 100% mark on screen.
Turn the "HEIGHT" control to raise the highest peak to the 50% line.

STABILITY CONTROL ADJUSTMENT FOR PRIMARY PATTERN

Adjust "STABILITY" control so that one (1) pattern is shown and adjust "EXPAND" control, (and "PARADE" control if necessary) to obtain pattern as shown in "PRIMARY PATTERN DATA".

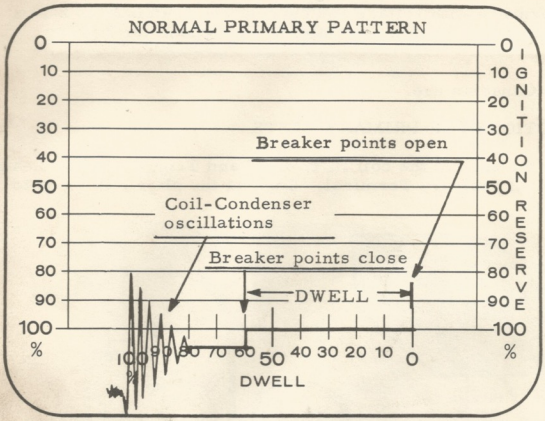


Figure 2

Figure #2 shows a normal primary pattern. Coil condenser oscillations correct and breaker plate not worn. Also breaker points opening & closing correctly with no excess "bounce."

Figure #3 shows patterns not superimposed. That is, trace as presented indicates worn distributor parts with breaker points not closing or opening at the same position of the cam. Can be caused by a worn or loose breaker plate or worn distributor shaft bushing allowing sidewise motion of breaker plate or distributor shaft.

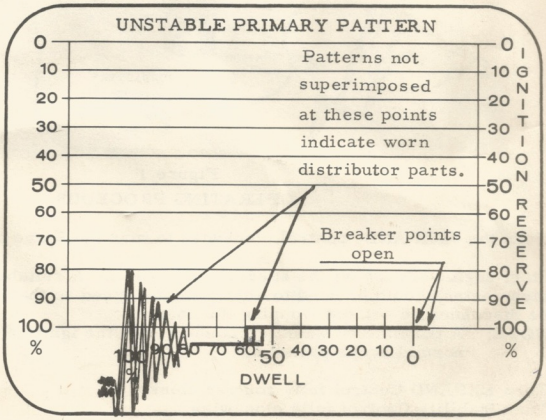


Figure 3

CONNECTIONS FOR SECONDARY TESTS

(Refer to Figure 4)

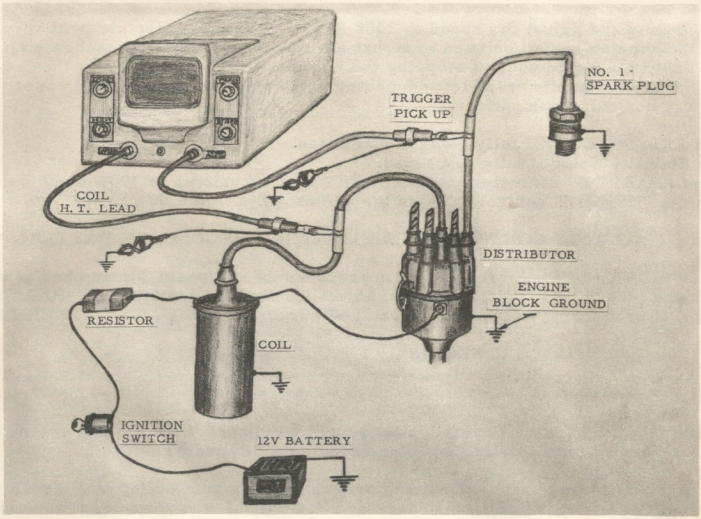


Figure 4

Connect the special clip on the end of the "Coil H. T." lead over the insulation of the coil secondary wire.

Connect the special clip on the end of the "Trigger Pick Up" lead over the insulation of No. 1 spark plug wire.

NOTE: Make sure that the wires are completely seated within the curved sleeves on both special clips.

Connect the two plain clips to a Good Ground on the distributor case or engine.

Refer to the following figures for the correct pattern and also for the scope presentation when troubles exist at various points in the ignition system.

Notes adjacent to the following patterns indicate the probable part or parts causing the trouble and the procedure to follow in order to make the necessary corrections.

The operator will find that his speed in correcting the faults which occur in ignition systems will increase in proportion to his use of the Scope, and his increased knowledge of being able to recognize a fault when he observes it on the Scope screen.

The patterns as shown on the following pages are all full size reproductions of the Scope screen.

They show in detail the patterns which will appear when specific ignition faults occur. There are many others with which the operator will become familiar. It is suggested that the test sequence as presented in this manual be followed.

OPERATING PROCEDURE

Turn the "EXPAND" control clockwise to turn the Scope on.

Start engine and adjust the speed to 1000 RPM. A suitable electric primary operated tachometer should be used to adjust engine speed so that the tachometer leads may be disconnected without stopping the engine.
NOTE: A tachometer when left connected to the ignition circuit, will cause abnormal scope patterns.

Turn EXPAND Control fully counter clockwise.
Turn Stability Control fully clockwise.
Adjust "PARADE" control to position LEFT END of pattern to 100% mark on screen.
Turn the "HEIGHT" control to raise the highest peak to the 50% line.

STABILITY CONTROL ADJUSTMENT FOR SECONDARY PATTERN

Adjust "STABILITY" control so that correct number of peaks for number of engine cylinders (4-6-8 "etc. ") is shown and adjust "EXPAND" control (and "PARADE" control if necessary) to obtain pattern as shown in "SECONDARY PATTERN DATA".

SECONDARY PATTERN DATA

Figure 5 below shows a Normal Pattern for a 6 cylinder engine. The spikes are all of a similar height indicating even firing on all cylinders.

The pattern as shown gives the firing order, starting with cylinder #1 at the extreme RIGHT, and the coil/condenser oscillations for #1 cylinder shown at the extreme LEFT.

The HEIGHT Control is adjusted to set the average of the spike tips to approximately the 50% mark on the screen. The EXPAND Control is set so that the pattern fills the complete screen from left to right.

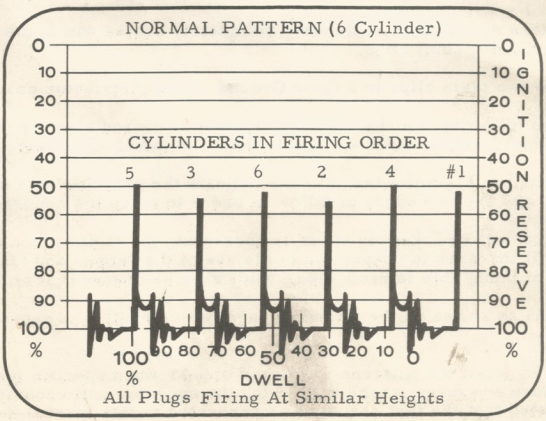


Figure 5

Figure 6 shows the normal 6 cylinder pattern as shown in Figure 5 EXPANED to show the firing presentation of ONE cylinder in detail.

The curved portion of the pattern between the "Plug Fires" and "Plug Stops Firing" points, shows the actual arc across the spark plug gap.

By turning the EXPAND control to its maximum clockwise position the spark plug arc (Plug Firing Line) may be observed in more detail. It should not be extremely jagged or broken up, and will tend to level off with less curve or dip.

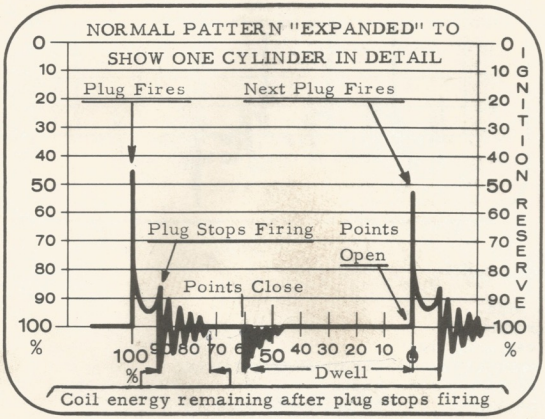


Figure 6

The DWELL time should be at least 60% to 70%. When checking the DWELL of the points, the pattern should be expanded so that the two spikes are positioned directly over the 100% and "0" reference marks on the screen.

SCREEN INDICATION:-
Pattern upside downas shown in Figure 7.

SUSPECTED FAULT:-
Reversed polarity of ignition coil.

CORRECTION:-
Reverse primary connections to coil before making any further tests.

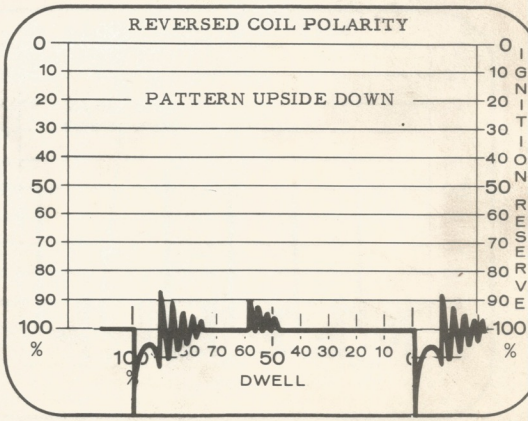


Figure 7

CHECK FOR IGNITION RESERVE- Figure 8

Disconnect any spark plug wire EXCEPT the one where Trigger Pickup cable is connected.

Start engine and observe spike as indicated for disconnected plug. Adjust "HEIGHT" Control to position top of this spike to "0" reference line at top of screen.

The remaining spikes should not extend upward above the 60% line on the screen.

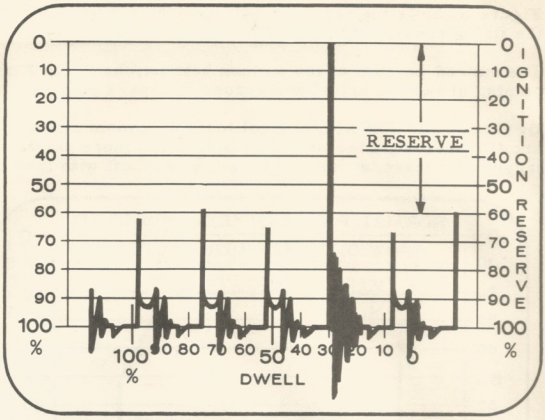


Figure 8

If the ignition reserve is less than that specified above, check for the following faults:

A. Spark plug gaps too wide.
B. Burned distributor rotor.
C. Burned distributor cap contacts.
D. Coil wire not fully seated in coil tower or distributor cap.
E. Condenser leakage or series resistance.
F. High breaker point resistance (Points burned or pitted.)
G. Defective ignition coil.

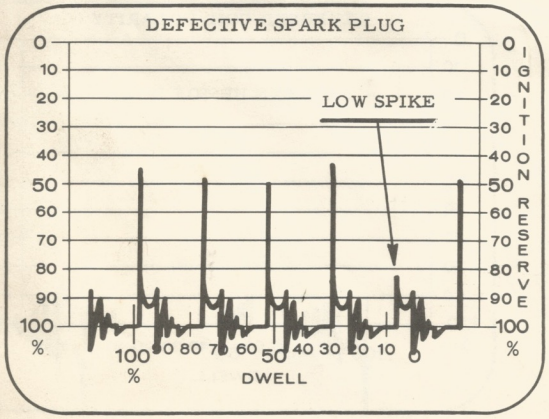


Figure 9

PATTERN INDICATION Figure 9.
Low spike on one or more plugs.

SUSPECTED FAULT:-
Individual low reading indicates shorted or fouled plug, close plug spark gap, damaged spark plug electrode, or breakdown in spark plug cable insulation.

CORRECTION:-
Remove spark plugs, inspect, clean, adjust or replace as necessary. Check plug wires for resistance and leakage. (Oil soaked cracked etc.)

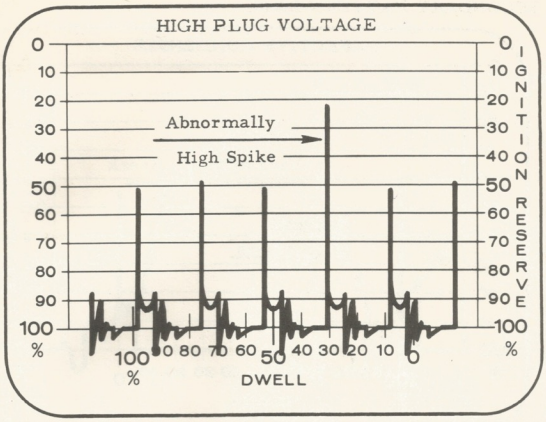


Figure 10

PATTERN INDICATION:- Figure 10.
Abnormally high spike, one or more plugs.

SUSPECTED FAULT IF ENGINE IS MISFIRING:-
Wide spark plug gap or gaps.

CORRECTION:-
Check for open or high resistance spark plug wire.
Check for poor connection at plug or distributor cap.

SUSPECTED FAULT IF ENGINE IS NOT MISFIRING:-
Distributor cap warped causing rotor blade to touch one or more contacts in cap. This fault would show up in the pattern as an extremely long plug firing line and reduced oscillations, (approximately 3 instead of 5 oscillations) at A, Figure 12 and Figure 13.

CORRECTION:- Very careful inspection of distributor cap and rotor.
Check for metal particles in distributor.

See NOTE #1 and Figure 16 under "NOTES" on page 12, for details of this fault.

PATTERN INDICATION:-
Uneven spikes, rough and uneven operation of engine.

SUSPECTED FAULT:-
Plug wires too high resistance, or open.
Incorrect spark plug gap.
Corroded connections in distributor cap.

Extremely low compression on cylinders corresponding to those having LOW spikes.

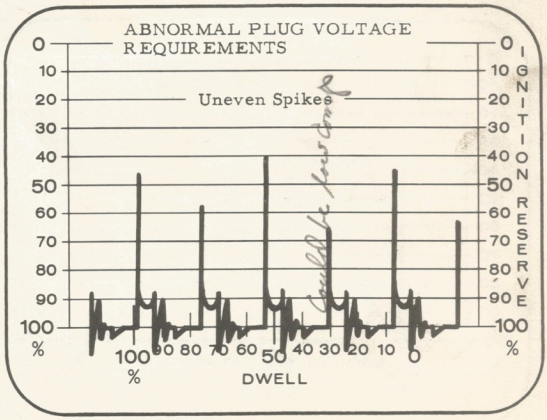


Figure 11

PATTERN INDICATION:
Figure 12.

Lack of sharp break of plug firing spike at base reference line as shown at A.
Reduced oscillations as shown at B.

SUSPECTED FAULT:-

Condenser series resistance. "A"
Leaky or partially shorted condenser. "B"

CORRECTION:-

Check for loose connections or replace condenser if defective.

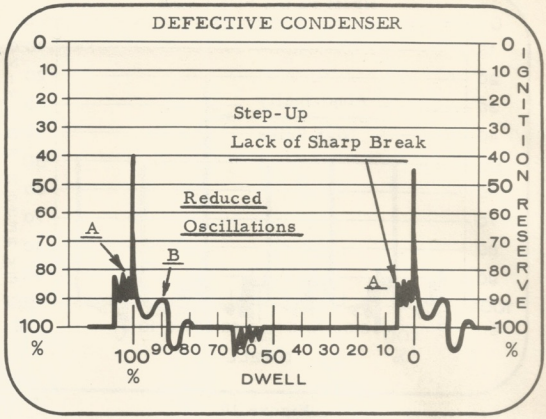


Figure 12

Possible loose or broken High Tension wire in Coil Tower.

NOTE: For similar indication, See Figure 13.

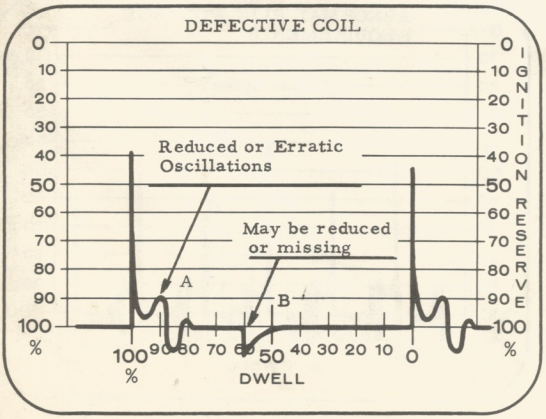


Figure 13

PATTERN INDICATION:
Figure 13.

Extremely reduced or erratic oscillations at A.
Reduced or missing oscillation at B.

SUSPECTED FAULT:-

Defective ignition coil.
Loose or broken High Tension wire in Coil Tower.

CORRECTION:-
Replace ignition coil.
Check High Tension wire.
NOTE: See FIGURE 12 for similar pattern.

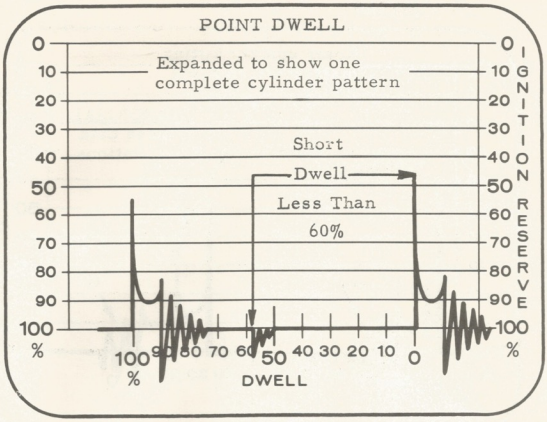


Figure 14

PATTERN INDICATION:- Figure 14.

Short Dwell, less than 60%.

SUSPECTED FAULT:-

Breaker points set to wide.

CORRECTION:-

Reset Dwell, and check and set Ignition Timing according to Manufacturers Specifications.

Read "DWELL" directly in percent on bottom line on screen. Normal DWELL should read between 60% and 70%.

If DWELL is incorrect, the final setting should be made using the Allen Model 27-03 D-T-VEE or POWER-TUNER.
See NOTE #2 on Page 12.

PATTERN INDICATION: Figure 15
Erratic display when points open or close.

SUSPECTED FAULT:-

Burned, pitted or bouncing breaker points.
Defective breaker plate.
Loose connection in Primary circuit.

CORRECTION:-

Replace, align and space breaker points.
Check distributor timing with Manufacturers Specifications and adjust if needed.

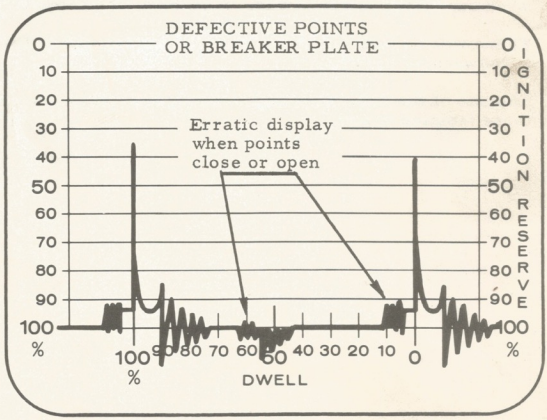


Figure 15

NOTE #1.

Figure 16 shows the pattern expanded to present two (2) plugs firing. At "A" the pattern is normal. At "B" the pattern shows the appearance of the plug firing line and the coil condenser oscillations when one of the distributor contacts is being hit by the rotor contact. The plug firing line is stretched out and flattened more than at "A", which means the plug is firing longer. This condition usually results in a shorter spike because it requires less high tension voltage to make the plugs fire when there is no gap between the rotor and the distributor contacts.

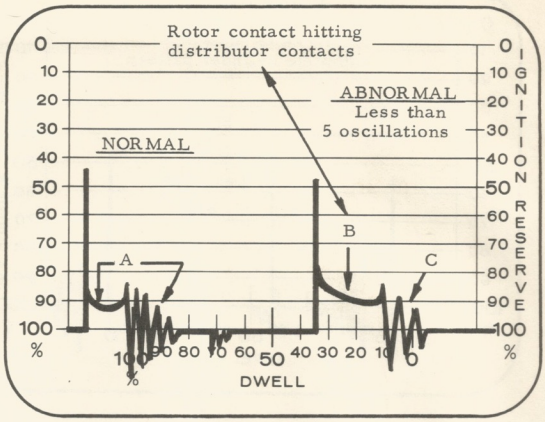


Figure 16

The prolonged plug firing time uses up most of the coil energy and results in fewer coil condenser oscillations as shown at "C". There are normally five distinct oscillations present at "C". When the above condition occurs there will be less than five, usually, three will be shown.

NOTE #2.

Measuring Dwell in percent instead of degrees simplifies the test. Dwell Time when expressed in percent is, in general, the same for all cars, that is 60 to 70%.

There will be isolated cases when the percentage of Dwell Time will be less, that is between 50 to 60%.

The use of the Allen cam angle conversion Scale, part #17672 will take care of these isolated cases.

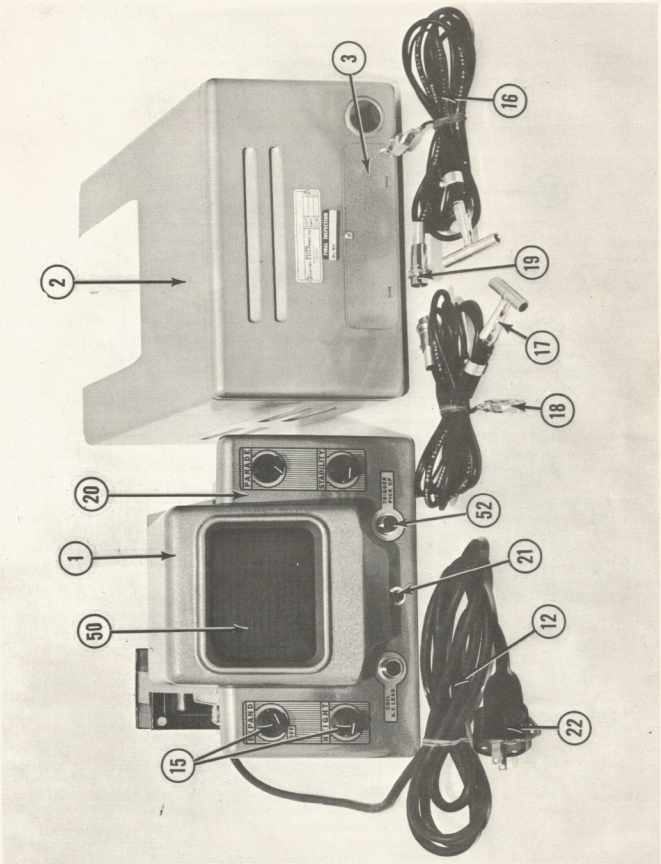
ALLEN ELECTRIC AND EQUIPMENT CO.

PARTS LOCATION PHOTOGRAPH

SERIES A

ALLEN SCOPE

10-06



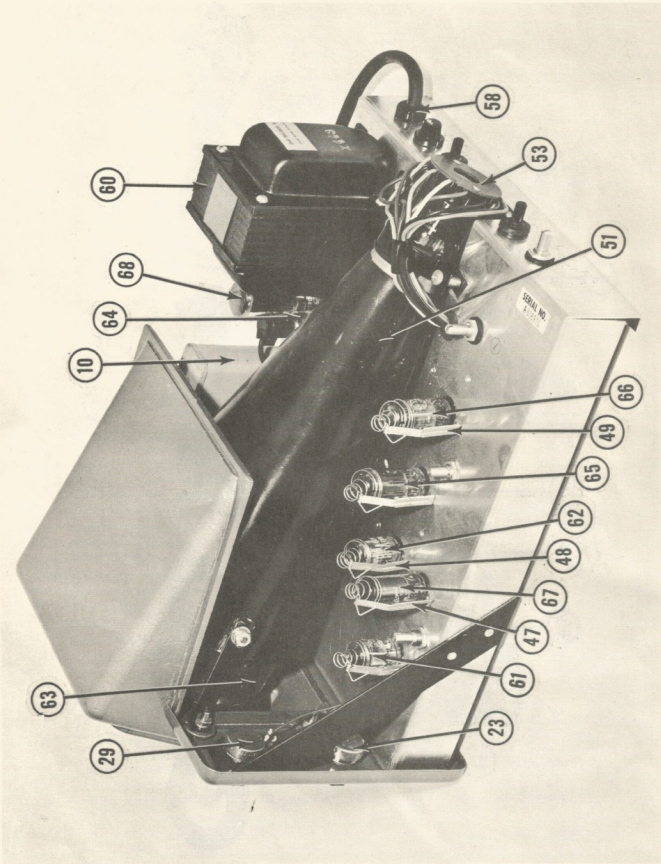
ALLEN SCOPE

10-06

ALLEN ELECTRIC AND EQUIPMENT CO.

PARTS LOCATION PHOTOGRAPH

SERIES A



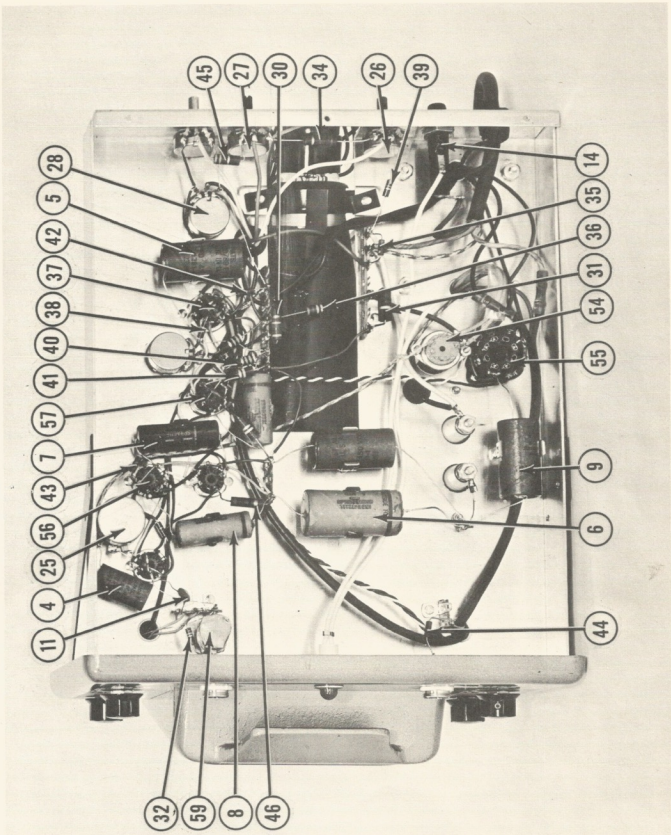
ALLEN ELECTRIC AND EQUIPMENT CO.

PARTS LOCATION PHOTOGRAPH

SERIES A

ALLEN SCOPE

10-06



ALLEN ELECTRIC AND EQUIPMENT CO.

SERVICE PARTS LIST

ALLEN SCOPE 10-06

MODEL	10-06	10-06	10-06	10-06	
SERIES	"A"	"B"	"C"	"D"	
PARTS ILLUSTRATION PAGE	201-202 203	201-202 203	201-202 203	201-202 203	
ILLUSTRATION SECTION	2	2	2	2	

KEY NO.	PART NAME	PART NUMBER	PART NUMBER	PART NUMBER	PART NUMBER	PART NUMBER
1	BEZEL	16850-1	16850-1	16850-1	16850-1	
2	CASE ASS'Y.	A-16883	A-16883	A-16883	A-16883	
3	COVER PLATE	8450-3	8450-3	8450-3	8450-3	
4	CONDENSER 100 MFD 6V.	1276-2	1276-2	1276-2	1276-2	
5	CONDENSER 16 MFD 450 V.	1281-1	1281-1	1281-1	1281-1	
6	CONDENSER .5 MFD 600 V.	1385	1385	1385	1385	
7	CONDENSER .25 MFD 400 V.	1569	1569	1569	1569	
8	CONDENSER .1 MFD 600 V.(2)	11343	11343	11343	11343	
9	CONDENSER 16 MFD 500 V.(2)	16036	16036	16036	16036	
10	CONDENSER .5 MFD 3000 V.	16877	16877	16877	16877	
11	CONDENSER .001 MFD 500 V.(2)	17233	17233	17233	17233	
12	CORD & PLUG, A. C.	15884-2	15884-2	15884-2	15884-2	
*13	FUSE SLO-BLO	15880	15880	15880	15880	
14	FUSE HOLDER	15881	15881	15881	15881	
15	KNOB (4)	16853	16853	16853	16853	
16	LEAD, PICK UP (2)	A-16894	A-16894	A-16894	A-16894	
17	CLAMP ASS'Y., PICK UP(2)	A-17228	A-17228	A-17228	A-17228	
18	CLIP (2)	1451	1451	1451	1451	
19	PLUG, CONNECTOR (2)	14681	14681	14681	14681	
20	PANEL	A-16886	A-16886	A-16886	A-16886	
21	PILOT LIGHT	16867	16867	16867	16867	
22	PLUG, CONVERSION	16061	16061	16061	16061	
23	POTENTIOMETER 500, 000 Ohm		12036-6	12036-6	12036-6	
23A	POTENTIOMETER 500, 000 Ohm				12036-4	
*24	POTENTIOMETER 500, 000 Ohm	12036-7	12036-7	12036-7	12036-7	
25	POTENTIOMETER 1000 Ohm	13272	13272	13272	13272	
26	POTENTIOMETER 100, 000 Ohm	16880	16880	16880	16880	
27	POTENTIOMETER 2 MEG Ohm	16881	16881	16881	16881	
28	POTENTIOMETER 1 MEG Ohm	16885	16885	16885	16885	
29	POTENTIOMETER 25, 000 Ohm (2)	17211	17211	17211	17211	
30	RESISTOR 75, 000 Ohm 1 W.	1981-1	1981-1	1981-1	1981-1	
31	RESISTOR 2200 Ohm 2 W.	6363-2	6363-2	6363-2	6363-2	
32	RESISTOR 560, 000 Ohm 1/2W.	6366-1	6366-1	6366-1	6366-1	
*33	RESISTOR 30, 000 Ohm 1 W.	6484	6484	6484	6484	
34	RESISTOR 1 MEG. Ohm 1 W.	6719-1	6719-1	6719-1	6719-1	
35	RESISTOR 1 MEG. Ohm 1/2W.(3)	6719-2	6719-2	6719-2	6719-2	
36	RESISTOR 82, 000 Ohm 2 W.	6848-2	6848-2	6848-2	6848-2	
37	RESISTOR 82, 000 Ohm 1 W.	6848	6848	6848	6848	
38	RESISTOR 100, 000 Ohm 1/2 W.	6849-1	6849-1	6849-1	6849-1	
39	RESISTOR 15, 000 Ohm 1/2 W.	6855-1	6855-1	6855-1	6855-1	
40	RESISTOR 47, 000 Ohm 1 W. (2)	6856	6856	6856	6856	
41	RESISTOR 220, 000 Ohm 1 W. (2)	6977	6977	6977	6977	
42	RESISTOR 1500 Ohm 1/2W.	15906	15906	15906	15906	
43	RESISTOR 22 MEG Ohm 1/2 W.(2)	16192	16192	16192	16192	
44	RESISTOR 2.2 MEG Ohm 1/2 W.	16194	16194	16194	16194	
45	RESISTOR 3.3 MEG Ohm 1 W.	16888	16888	16888	16888	

MINOR REPAIR KIT- CUSTOMER MAY INSTALL.
MAJOR REPAIR KIT- SERVICE STATION USE ONLY.
* PARTS NOT ILLUSTRATED.

SERVICE NOTE-SEE END OF PART LIST.

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ALLEN SCOPE
10-06

ALLEN ELECTRIC AND EQUIPMENT CO.

SERVICE PARTS LIST

MODEL	10-06	10-06	10-06	10-06	
SERIES	"A"	"B"	"C"	"D"	
PARTS ILLUSTRATION PAGE	201-202 203	201-202 203	201-202 203	201-202 203	
ILLUSTRATION SECTION	2	2	2	2	
KEY NO.	**PART NAME**	**PART NUMBER**	**PART NUMBER**	**PART NUMBER**	**PART NUMBER**	**PART NUMBER**
46	RESISTOR 20 Ohm 1 W.	17227	17227	17227	17227	
47	RETAINER, TUBE	12858	12858	12858	12858	
48	RETAINER, TUBE	13005	13005	13005	13005	
49	RETAINER, TUBE	13282	13282	13282	13282	
50	SCREEN, C.R.T.	A-16852	A-16852	A-16852	A-16852	
51	SHIELD CONE	A-16875	A-16875	A-16875	A-16875	
52	SOCKET, CONNECTOR (2)	14682	14682	14682	14682	
53	SOCKET, C.R.T.	16973	16973	16973	16973	
54	SOCKET, TUBE	13283-1	13283-1	13283-1	13283-1	
55	SOCKET, TUBE	1291	1291	1291	1291	
56	SOCKET, TUBE	15870	15870	15870	15870	
57	SOCKET, TUBE	15871	15871	15871	15871	
58	STRAIN RELIEF	8892-3	8892-3	8892-3	8892-3	
59	TRANSFORMER	13151	13151	13151	13151	
60	TRANSFORMER	16859	16859	16859	16859	
61	TUBE (#5696)	12022	12022	12022	12022	
62	TUBE (6AL5)	12024	12024	12024	12024	
63	TUBE C.R. (5UP1)	16870	16870	16870	16870	
64	TUBE (1 x 2A)	16882	16882	16882	16882	
65	TUBE (12A x 7)	16889	16889	16889	16889	
66	TUBE (12AU7)	16890	16890	16890	16890	
67	TUBE (6AU6)	16891	16891	16891	16891	
68	TUBE (6A x 5)	16897	16897	16897	16897	
	LOOSE PARTS					
*69	DIAL CHECK	70003	700033	70003	70003	
*70	JUMPER LEAD	A-17394	A-17394	A-17394	A-17394	

MINOR REPAIR KIT-CUSTOMER MAY INSTALL.
MAJOR REPAIR KIT-SERVICE STATION USE ONLY.
* PARTS NOT ILLUSTRATED.

SERVICE NOTE-SEE END OF PARTS LIST.

Printed in U.S.A.

ALLEN EQUIPMENT REPAIR SERVICE

AUTHORIZED FIELD SERVICE STATIONS

Allen equipment in need of maintenance service should be shipped complete, with all leads, to one of the Allen Authorized Field Service Stations listed on the next sheet, or the factory (unless located outside the U.S.A.), whichever is nearer or most convenient.

To expedite prompt repairs, your return order should contain a brief explanation of the difficulty, and specifically state whether the unit is to be repaired, or placed in "like new" condition.

REPAIR

When the equipment is marked "repair", it will be placed in proper operating condition only.

LIKE NEW

When the equipment is marked to be placed in "like new" condition, all necessary repairs will be performed and the unit will be refinished.

WARRANTY SERVICE

When warranty repairs are requested on a piece of equipment, it should be shipped complete, with leads, to an Allen Authorized Field Service Station or the factory for repairs, transportation prepaid. The work will be performed, and the instrument returned, transportation prepaid.

When repairs under warranty are expected, the following information must be furnished at the time the unit is shipped to the factory or Authorized Field Service Station for repairs, if within the U.S.A.:

Original Owner's Name	Model Number of Unit
Owner's Address	Serial Number of Unit (complete with
Wholesaler's Name	letters and numerals)
Wholesaler's Address	Date of Purchase by Using Owner

By following the proper procedure, you will assist the Allen Authorized Field Service Station, or the factory, if located in the U.S.A., in efficiently performing the work needed and returning your equipment to you with a minimum of delay.

WARRANTY POLICY

All Allen products are guaranteed against defect in workmanship and material for a period of one year from date of sale to the original using purchaser (excepting service parts which carry a 90-day guarantee).

CONTINGENCIES

Warranty shall not apply to a piece of equipment, or part thereof, which has, in our judgment, been rendered unreliable or inoperative through abuse, negligence, operation not in accordance with instructions, accident, or to unauthorized repairs or alterations. This warranty is valid only to the original using purchaser, and under no conditions does it apply to subsequent purchasers.

LIABILITY LIMITATIONS

Other than the above expressed warranty, we have not authorized any person or persons to give or assume for us any other liability in connection with the sale of our equipment, nor are we responsible for any obligation or liability for damage or injury to any person or property resulting directly, or indirectly from design material, workmanship, or installation on any of our equipment.

REPLACEMENT PARTS

Replacement parts may be obtained by ordering from Authorized Field Service Stations, or the factory.

Always specify model and complete serial number of the equipment, as well as the voltage and cycles, as indicated on the equipment name plate, when ordering parts.

ALLEN ELECTRIC AND EQUIPMENT CO.

Form No. R-151 Printed in U.S.A.

AUTHORIZED SERVICE STATIONS — UNITED STATES (Continued)

OREGON

Eugene	Smith Radio Communications Service P. O. Box 383, 162 E. 6th Street
Portland 9	General Electronics 338 N. W. Broadway at Flanders

PENNSYLVANIA

Harrisburg	Morrison Equipment Company 812 S. 20th Street
Philadelphia 30	William H. Weiss Assoc. 1819 Fairmont
Pittsburgh	Wilcox Brothers 5157 Liberty Avenue
Scranton	Auto Elect. Test Equip. Service 340 E. Locust Street
Windber	Steven's Electric 2100 Graham Ave.

TENNESSEE

Chattanooga 11	Auto Equipment Co. 3227 Rossville Blvd.
Knoxville	Auto Radio Service Company 521 N. Central St., N.W.
Memphis	AATV Service 3375 Jackson
Nashville	Klusman Brothers 2700 Vanderbilt Place

TEXAS

Dallas	Commercial Parts, Inc. 3806 Ross Avenue
El Paso	Southwest Equipment Service 3831 Porter Street
Harlingen	Circle Industries 813-15 W. Tyler Avenue
Houston	Allen Service Center of Houston, (R. L. Wilson) 5707 Texarkana Street
Houston 3	Gilmore-Stewart Company 3509 Leeland
San Antonio 10	Fast Charger Company 840 Berkshire
Waco	Instrument & Meter Service Co. 1316-20 Franklin

UTAH

Salt Lake City	State Electronics Inc. 3927 Highland Drive

VIRGINIA

Richmond	Allied Electronics Company 324 W. Brookland Park Blvd
Roanoke	Hubbard Service Center 1005 Salem Ave., S.W.
Winchester	Valley Distributors, Inc. 22 Amherst Street, Box 766

WASHINGTON

Seattle 22	Mosey & Mosey 1218 10th Avenue
Spokane	Atlas Television Service Co. N. 1316 Division St.

WEST VIRGINIA

Charleston	Abbott's Service & Repair 1213 W. Washington St.
Fairmont	Fairmont Auto Supply Co. 424 Fairmont Ave.

WISCONSIN

Milwaukee	Ned Alpert 2779 N. 3rd St.

SECONDARY SERVICE STATIONS — UNITED STATES

ILLINOIS

*Champaign	Hudelson Sales Company 518 N. Hickory Street

IOWA

**Cedar Rapids	Cedar Rapids Auto Supply 613 2nd Avenue, S.E.
**Dubuque	B. & G Automotive Parts, Inc. 1084-1090 Iowa Street
**Waterloo	Lewis Motor Supply, Inc. 1801 Washington St.

MICHIGAN

*Grand Rapids	The Ridge-Grand Rapids Co. 1148 Division Avenue, S.

MISSOURI

*Springfield	Springfield Electric Service Co. 1640 E. Trafficway

NEW YORK

Bellmore	Automotive Electronics Equipment Co. 2606 Merrick

OHIO

*Columbus 15	Ohio Auto Parts Company 4th and Spring Streets

AUTHORIZED SERVICE STATIONS — CANADA

ALBERTA

Calgary	Hutton's Ltd. 131 11th Avenue, West
Edmonton	Loveseth Ltd. 10180 105th Street

BRITISH COLUMBIA

Sidney	The Fairey Aviation Co. of Canada Ltd. P. O. Box 85, Patricia Bay Airport
Vancouver	Auto Marine Electric Ltd. 118 W. 2nd Avenue
Vancouver	Instrument Service Lab. Ltd. 29 W. Broadway
Vancouver 3	Jeffree & Jeffree, Ltd. 775 Homer St.

MANITOBA

St. Boniface	Fields TV & Radio Service 351 Marion Street

ONTARIO

London	**James Cowan & Co., Ltd. 311 Talbot Street
London	Dominion Radio & TV Service 462 Dundas Street
Ottawa 3	Keyes Supply Co., Ltd. 80 Bayview Rd.
Toronto	Intricate Devices 1103 Yonge Street
Windsor	Downtown Auto Supply Windsor Ltd 205 Glengarry Ave.

QUEBEC

Montreal	Instrument Sales & Service 1089 Bleury Street

SASKATCHEWAN

Saskatoon	Penn T.V. Co. 712 Broadway

AUTHORIZED SERVICE STATIONS — FOREIGN

BELGIUM

Bruxxelles, (Brussels)	Etablissements, Daniel Doyen, S.A. 31-32 Boulevard, Du Midi

HOLLAND

Amsterdam	E. H. Mulder Chassestraat 60 (W. Netherlands)

ISRAEL

Tel Aviv	Bernstein Bros. Ltd. 13 Peth - Tikwah Rd.

ITALY

Milano	Libio Aurellano Principe Eugenio 6

JAPAN

Tokyo	Banzai Trading Co., Ltd. 6, Tori 1 Chomea, Nihonbashi, Chuo-ku

MEXICO

Mexico City, D.F.	Electrical Works Laganda Guzman 43 Z. P. 17

SOUTH AFRICA

Natal	Val M. Marwick 12 Buchanan Street Pietermaritzburg

SWEDEN

Malmo	AGEBE ! Malmo Aktiebolag Lundavagen 54
Stockholm	Aktiebolaget AGEBE Luntmakargatan 35

VENEZUELA

Caracas	Corporacio'n M. E. S. A. Avenida Victoria No. 40

* Battery Chargers Only

** Battery Chargers Only - Sold by this Organization

Allen WORLD-WIDE FIELD SERVICE STATIONS

AUTHORIZED SERVICE STATIONS — UNITED STATES

ALABAMA

Birmingham 4	Southern Jack Co 615 N. 9th Street

ARIZONA

Phoenix	Dyna-Tronics, Inc. 3704 N. 7th Street

CALIFORNIA

Fresno	Equipment Service & Supplies 2707 Tuolumne Street
Hawthorne	Dealer Sales & Service 790-792 Hawthorne Blvd.
Los Angeles	Vernon Electric Co. 233 W. Jefferson Blvd.
Los Angeles	Willey Electronics Co. 5426 W. Washington Blvd.
Oakland	Automotive Equipment Service 393 26th Street
Sacramento	Henderson Brothers 1800 23rd Street
San Diego	Authorized Equipment Service 420 W. Beech Street
San Diego	Marine Electric Company 1991 National Avenue
San Francisco	Battery & Elect. Equip. Serv. 1016 Bryant Street

COLORADO

Denver	Hutchinson Electric 1248 Santa Fe Drive

DELAWARE

Frederica	Ferguson's Automotive Electric Service Route #1 at 113 & Bowers Beach Rd.

DIST. COLUMBIA

Washington	Allen Service Center, Inc. 1724 14th Street, N. W.

FLORIDA

Ft. Lauderdale	George's Electric Repair 607 S. Andrews Avenue
Ft. Myers	Ft. Myers Armature Works, Inc. 3333 Second Street
Jacksonville	Bill Burney's Radio & TV Service 2735 Rosselle
Miami	Fla. Precision Instr. Corporation 1221 Biscayne Blvd.
Orlando	Orlando Armature Wks., Inc. 900 W. Central Avenue
Pensacola	Pensacola Electric Garage, Inc. 223 W. Gregory Street
Sarasota	Brooks Electronics 411 S. Pineapple Ave.

GEORGIA

Atlanta	Electronic Equipment, Inc. 526 Pinster Avenue, N. E.

ILLINOIS

*Champaign	Hudelson Sales Company 302 E. University Ave.
Chicago 51,	Turner Equipment Service 922 N. Cicero Ave.
Peoria	United Radio Service 707 N. Main
Quincy	Gem Electronic Service 1036 Broadway
Rookford	General Electronics 201 Adams

INDIANA

Fort Wayne	Wayne Electric Company 213 W. Brackenridge Street
Gary	Seaburg-Welsh Auto Supply, Inc. 400 East Fifth St.
Indianapolis	Elect. Tool & Motor Service, Inc. 34 W. 10th Street
Plymouth	Myers Auto Electronics 2100 S. Michigan Road

IOWA

**Cedar Rapids	Cedar Rapids Auto Supply 613 2nd Avenue, S. E.
Cedar Rapids	Stanley Reeder Radio & T.V. Service 118 6th Street, S.E.
Council Bluffs	Electro Lane, Inc. 228 S. Main Street
Des Moines	Electronic Engineering Co. 1100 Keo Ave.
**Dubuque	B. & C. Automotive Parts, Inc. 1084-1090 Iowa Street
**Waterloo	Lewis Motor Supply, Inc. 1801 Washington St.

KANSAS

Kansas City	A. F. E. Unit Service 2501 W. 45th Avenue
Salina	Wallis Company 516 N. 9th, P. O. Box 1067
Wichita 2	Alan Appliance Company 339 N. Main

KENTUCKY

Louisville	T. A. Kincheloe Radio Service 330 S. First Street

LOUISIANA

Shreveport	Authorized Equip. Service Co. 310 E. Stoner Avenue

MASSACHUSETTS

Watertown	Electronic Tune-Up Company 5 Louise Street

MICHIGAN

Battle Creek	Commercial Electric Company 133 Hamblin Avenue
Bay City	Van Zale Electric Co. 701 40th Street
Detroit 4	Advance Equipment Service 4908 W. Boston
Detroit	Serv. Air Inc. Detroit City Airport
*Grand Rapids	The Ridge-Grand Rapids Co. 1148 Division Avenue, S.
Grandville	Bill's T.V. & Toy Center 4354 Chicago Drive
Traverse City	Northern Auto Parts Co. 324 E. Front St.

MINNESOTA

Minneapolis	Ecklen Radio Company 114 Lyndale Avenue, North
Minneapolis	Instrument Service Lab's. 5729 - 23 Avenue, South
Moorhead	Carl's Appliance Company 24 N. Fourth

MISSOURI

St. Louis	National-Northside Co. 2500 N. 9th St.
*Springfield	Springfield Electric Service Co. 1640 E. Trafficway

MONTANA

Butte	Automotive Supply Company 115 S. Arizona Street

NEBRASKA

	SEE IOWA

NEW JERSEY

Jersey City	T & K Fast Charger Service 75 Cator Avenue
North Bergen	ATeCO 2106 Tonnelle Avenue

NEW MEXICO

Albuquerque	A-One Equipment Repair Co. 7205 Central, N. E.

NEW YORK

*Bellmore	Automotive Electronics Equipment Co. 2606 Merrick
Centerport, L. I.	Joseph J. Green P. O. Box 201, 51 Tuscorora Drive
Lackawanna	Allen Service Center of Buffalo 593 Ridge Road
Oceanside, L. I.	Kraemer-Mayers Corporation 464 Merrick Road
Syracuse	Teds Electrical Ser. 449 Shonnard Street
Troy	R. V. Farmer Carb. & Ign. Service 113th Street & 5th Avenue
Yonkers	A. E. D., Incorporated 852 Midland Avenue

NORTH CAROLINA

Raleigh	Electronics Sales & Service Co. 403 W. Peace Street

NORTH DAKOTA

Bismark	Electronic Center Inc. 214 Broadway

OHIO

Cincinnati	Pleasant Electric Company 1725 Central Avenue
Cleveland	Makuh Electrolab 4787 Memphis Avenue
*Columbus 15	Ohio Auto Parts Company 4th and Spring Street
Findlay	Frank Trauchi 112 W. High Street
Sidney	Dunson Supply Company 328 N. Main Street

OKLAHOMA

Oklahoma City	Cox Radio & Television 111 N. W. Ninth Street
Tulsa	Hammond Electric Co. 810 E. Third Street

NOTE: AUTHORIZED SERVICE STATIONS: Authorized to repair all Allen Equipment.
SECONDARY SERVICE STATIONS: Authorized to repair only the equipment noted.