

MODEL 777 TYPE I S/N 2624

OPERATING INSTRUCTIONS

AND

TUBE

TEST

DATA

for . . .

WESTON EMISSION TUBE TESTERS

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WESTON ELECTRICAL INSTRUMENT CORP., NEWARK 5, NEW JERSEY, U. S. A.

INSTRUCTIONS FOR MODELS 685, 773, 774, 775, 777, 778.

MINE TYPE 7 SIN 2024

I. GENERAL

1-1. These operating instructions and tube data fit the following models:

MODEL	TYPE	REMARKS
685	3 & 3A	Conversion not necessary
773	All Types	2nd Conversion
774	1, 2 & 3	1st Conversion
774	4 & 5	Conversion not necessary
775	All Types	2nd Conversion
777	1, 2, 3, 4, 5, & 6	1st Conversion
777	7, 7A, 8 & 9	Conversion not necessary
778	All Types	1st Conversion

Under the REMARKS column above, "Conversion" indicates that the model has been modernized and that these instructions fit the modernized version only.

1-2. Care should be exercised in the use of this manual when applied to the 2nd conversion of the Model 773. This instrument had symbols on the panel which referred to symbols on the tube data chart. These have been changed in the tube data, and hence the symbols †, *, etc., on the panel are not to be used.

1-3. The Models 774, 775 and 778 are combination tube checkers and analyzers. This instruction manual refers only to the tube checker portions of these devices.

1-4. Field experience indicates that many users are not obtaining full use of their equipment, therefore it is suggested that the operator review his test procedure after carefully reading these instructions.

1-5. The Tube Testers listed above are of the emission type, embodying the necessary features for a quick and accurate check of total tube emission. In addition, a separate element test has been provided, a very important check with this type of device.

1-6. By actual timed tests, it will not take longer than 15 seconds to check a tube after the warm-up period once the user becomes familiar with his instrument.

II. STEP-BY-STEP PROCEDURE FOR TESTING TUBES

- 2-1. a. Plug the device into a 60 cycle 110 or 120 volt supply.
- b. Rotate the "CIRCUIT SELECTOR" to the "LINE SHORT CHECK" position.
- c. Set the "FILAMENT SELECTOR" in accordance with the tube data.
- d. If a single dagger (†) appears following the tube type number, index the "A" toggle to the "IN" position before inserting any tubes.
Note: See paragraph 3-6.
- e. Insert the tube in the socket corresponding to the proper pin arrangement. If a double dagger (††) appears after the tube type number on the tube data chart, the "A" socket should be used.
- f. Rotate the "LINE VOLTAGE" control until the pointer indicates at the "LINE CHECK" mark.
- g. Rotate the "TUBE SELECTOR" to the figure indicated on the tube data chart.
- h. Short Test the tube in the following manner:
1. Place all toggle switches in "OUT" position.

Note: Do not index the "A" toggle switch to the "OUT" position when a single dagger (†) follows a tube type number. (See paragraph 3-6).

2. Index one of the toggle switches called for on the data chart under the "IN" position column to the "IN" position.
3. Tap tube and note if the neon lamp lights.
4. A lighted neon lamp indicates a short and the tube should be rejected.
5. Return the toggle to the "OUT" position.
6. Repeat the above procedure for each of the other toggle switches called for on the data card.
Note: The position of the TUBE SELECTOR has no effect when short checking a tube. Index only those toggle switches called for on the data chart under "IN" position column.
7. If a star (*) follows the tube number on the data chart check for cathode leakage by indexing the "A" toggle to "IN" position with all the other toggles in the "OUT" position.
 - i. Rotate the CIRCUIT SELECTOR to a position determined by the following:
 1. Select the DIODE, BAT. TUBES, or SPEC. TUBES position on the CIRCUIT SELECTOR in accordance with the abbreviations Di., Bat., or Spec., following the tube type number on the data chart. See page 7 paragraph 5-7 for special instructions on 773 tube checkers.
 2. Use the NORMAL TUBES position when no abbreviation follows the tube type number on the data chart.
 - j. Index the toggle switches at the bottom of the panel to the "IN" position as called for on the tube data chart under the "IN" position column for a total emission test.
 - k. Note meter indication. If pointer is in the red or yellow section, reject the tube as bad. If the pointer indicates in the green section, proceed as outlined below with the separate element check. (See paragraph 3-3).
 - l. Check each element separately as follows:
 1. Leave the tube checker set for total emission test as above per paragraphs i-k.
 2. Using one of the toggles already in the "IN" position, index it to the "OUT" position and note a drop in the meter deflection.
 3. A drop in meter deflection of only one-quarter of a division indicates that the element is making contact. (See paragraph 3-9).
 4. Return the toggle to the "IN" position.
 5. Repeat the same procedure for each of the other toggles that are in the "IN" position. Note: Do not index an "A" toggle switch to the "OUT" position when a single dagger (†) follows the tube type number.

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III. DETAILED OPERATING INSTRUCTIONS

3-1. NORMAL TYPES. Plug the tester in an a-c line having frequency and voltage in accordance with the name plate rating. On 230V models see additional instructions stapled on the inside bottom of case if line voltage coverage is not correct, or if the instrument is to be used on 115 volt lines. Turn on the tester by rotating the "CIRCUIT SELECTOR" switch to the "LINE SHORT CHECK" position. Refer to the tube data and note the filament and tube selector setting and set these controls accordingly. Note further, whether some reference is made to battery, diode, or special type after the tube number. All tubes that have no reference to any of these types are considered "NORMAL TYPES." The testing of any of the other types will be covered in separate paragraphs.

Determine whether the tube has a center tap filament as indicated on the tube chart by a dagger (†) immediately following the tube type number. Tubes of this type require that the "A" toggle switch be indexed to the "IN" position before inserting the tube in the socket and it should be kept in this position during the complete test. Place the tube in the socket having the corresponding pin arrangement and allow the tube to heat. A correction for line voltage should be made at this time if necessary, by setting the instrument pointer accurately to the line check position, making use of the "LINE VOLTAGE" control.

Short test the tube keeping in mind that the CIRCUIT SELECTOR must be indexed to "SHORT TEST" and that only one toggle switch should be in the "IN" position at a time. Index only those toggles called for on the data chart under the "IN" position column to the "IN" position one at a time. If a star (*) follows the tube type number on the data chart, check for cathode leakage by indexing the "A" toggle to the "IN" position, while all the other toggles are in the "OUT" position. Should a short be indicated by a lighted neon lamp the tube should be rejected. A flickering of the neon lamp at the instant of throwing a toggle switch does not indicate a short.

Now rotate the "CIRCUIT SELECTOR" switch to the "NORMAL TUBES" position. Place each of the switches listed under the "IN" position correctly, and note the test reading. There are two groups of listings for some tubes such as the 6F8 with an "&" sign between them. This tube has two sections and should be tested separately. For this particular tube, switches "B" and "E" should be thrown to the "IN" position and the reading noted, the switches returned to the "OUT" position, then "D" and "F" thrown together to the "IN" position and the reading on the second section taken. The "&" sign in all cases separates the electrode switches from each section of the tube to be tested. After the total emission test has been made, do not neglect to perform the open element test described in paragraph 3-9.

Note: Certain types are marked directly after the tube number on the tube data list with a double dagger (††). These tubes, due to unusual electrode connections must be tested in the "A" socket corresponding to the pin arrangement of the tube to be tested. In all other respects, these tubes are tested in the usual way.

3-2. BATTERY TYPES. These are the low current filament type of tube and must be tested as a separate group. These tubes can be damaged if not correctly handled, and all tubes of this type are marked "Bat." directly after the tube number. When testing these tubes, the "CIRCUIT SELECTOR" switch should be indexed to the "BATTERY TUBES" position, but in all other respects, the procedure is the same as listed under "NORMAL TUBES." Note that all of these tubes are of the filament type and, therefore, no cathode leakage test is required.

3-3. DIODES. Tubes of this type are marked on the tube data card as "Di." and when so designated, the "CIRCUIT SELECTOR" switch should be placed in the "DIODE" position. When testing diode plates, it should be noted that the tube selector control should always be placed in the "O" position. A black line and arrow on the instrument scale is used as the passing line for emission of diode plates. If the meter indication is above this line the tube should be passed as having sufficient emission in accordance with R.M.A. limits.

3-4. Certain tubes, such as the 957 and 958, require that the "CIRCUIT SELECTOR" be set to the "DIODE" position to prevent damage to the emitting surface of the filaments. These tubes have a double star (**) followed by the abbreviation Di. immediately following the tube type number on the tube chart. These tubes are not actually diodes, but are checked in the diode position, and the reject point for such types is 16 on the 50 line DC Volt arc.

3-5. SPECIAL TYPES. Tubes listed with the marking "SPEC." after the tube number, should be checked with the "CIRCUIT SELECTOR" switch indexed to the "SPECIAL TUBES" position. This is used principally for rectifier types, but with the exception of the setting of the "CIRCUIT SELECTOR," the procedure for test is normal. See page 7 paragraph 5-7 for special instructions on 773 tube checkers.

3-6. CENTER TAP FILAMENT TYPES. Center tap filament types may fall under any of the classifications, such as diode, battery, or normal types. Tubes in this category have a single dagger (†) immediately following the tube type number on the tube data chart. It is important to index the "A" toggle switch to the "IN" position before inserting the tube in the socket and keep in this position during the complete test. A lighted neon lamp will indicate continuity of third filament connections. No short tests can be made on tubes of this type unless the operator wishes to reduce the filament voltage to 1.5 volts and then index the "A" toggle switch to the "OUT" position and perform the short test in the normal manner.

3-7. NORM. REV. TOGGLE SWITCH. In the lower right hand portion of the panel is a toggle switch that performs the function of reversing the meter connections. Ordinarily this switch should be indexed to the "NORMAL" position. If the tube has a "f" symbol following the tube type number, this toggle switch should be indexed to the reverse position to make the tube test. To short check tubes of this type, index the "A" toggle to the "IN" position, leaving "G" toggle in the "IN" position.

3-8. TUBE DATA CHART SYMBOLS. In the preceding paragraphs have been listed the procedure for checking the various tubes having certain symbols following the tube type numbers. The operator of

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this device should keep in mind that any one tube may have several symbols indicating that the procedure outlined for each one of the symbols should be followed. For instance, a tube type having a star and a double dagger (* ††) should be checked in an "A" socket corresponding to the pin arrangement of the base, and should be also checked for cathode leakage. The symbols used on the tube chart are listed below and it must be kept in mind that any combination of these symbols might possibly be used following the tube type number.

§ When testing for open elements or short checking, F&G toggles should be thrown to the "IN" and "OUT" positions together.

° Same holds for toggles B&D. See first note.

§§ The same holds for toggles D & G. See first note.

∇ The same holds for toggles B, D & F. See first note.

△ The same holds for toggles B & C. See first note.

For 774-4 & 5 and 685-3 & 3A only. Use Fil. Sel. "1" on all other models and an adapter with a 1.5 ohm resistor placed in one of the filament leads.

‡ An adapter, octal top, octal bottom, wired straight through, is required and it should be placed in "regular" octal socket.

** Reject Point is 16 on 50 Line DC. Arc.

† Index switch "A" to "IN" position before inserting tube; keep in this position during complete test. A lighted neon lamp will indicate continuity of third filament connection. No short test; refer to instruction in paragraph 3-6.

* Test for cathode leakage by throwing "A" switch to "IN" position when the tube is hot; all other switches should be in the "OUT" position.

†† Test in "A" socket.

¶ Place "Norm." "Rev." toggle in "Rev." position; to short check, index "A" toggle to "IN" position, leaving "G" in the "IN" position.

|| Place "Norm." "Rev." toggle in "Rev." position.

& Move grid lead to the cap that gives the higher reading.

°° Tie both grid caps together.

□ When testing for open elements or short testing, B&H toggles should be thrown to the "IN" and "OUT" positions together. The same holds for C&G toggles. Check for cathode leakage.

3-9. OPEN ELEMENT TEST. In checking for emission on any tube, some of the electrodes handle most of the emission current because of their proximity to the cathode, resulting occasionally in a tube checking good when one of the elements carrying only a very small current is open. Such a tube will not operate in a receiver. With the Weston system of independent electrode switching, this type of fault can be located readily. First, set the tube up for the regular total emission check as outlined in the previous paragraphs. Using one of the toggles already in the "IN" position, index it to the "OUT" position and note a drop in the meter deflection. If there is no change in meter indication, the tube should be rejected as bad due to an open element.

If satisfied that the particular element is not open, return its toggle to the "IN" position and repeat the above procedure for each of the other electrode switches used in testing that tube as shown on the tube data card. Note: Sometimes electrodes in some tubes will give only about one-quarter of a division change in meter deflection when a particular switch is pulled from the "IN" position to the "OUT" position. This is normal, as it shows that the element under test is drawing current. This part of the procedure for testing tubes in an emission checker is very important. See paragraphs 3-8 for possible exceptions.

IV. SETTING UP TUBE DATA

4-1. Sometimes it is necessary in an emergency to set up tube data for tubes not listed on the data chart. By using the table given below, it is possible to pick proper toggle switches to be indexed to the "IN" position. Reference to the base diagram of the tube to be checked will indicate what pin numbers are involved. Determine the type of base and, referring to the chart, the letter opposite the pin number is the toggle switch that should be indexed to the "IN" position. For instance, 6K7 tubes have elements on pins 3, 4, 5, and the cap. The 6K7, having an octal base, a glance at the chart indicates that toggle B corresponds to pin 3, C to pin 4, D to pin 5, and E to the grid cap. Cathode connections on heater type tubes can be disregarded as the toggle switch corresponding to this pin must always be set in the "OUT" position.

Toggle Switch	Octal	Loctal	7 Prong Miniature	Large & Small 7 Prong	6 Prong	5 Prong	4 Prong	7 Prong Miniature "A"	Loctal "A"	Octal "A"	Acorn	9 Pin	9 Pin "A"
1st Fil													
A	7	8	1	1	1	1	3	8	8	4	5	9	
B	3	2	3	2	2	2	1	1	3	2	1	3	
C	4	3	4	3	3	3	7	3	4	3	2	4	
D	5	4	5	4	-	-	5	4	5	-	3	5	
E	Cap	5	Cap	Cap	Cap	Cap	Cap	Cap	Cap	Cap	9	7	
F	6	6	6	5	4	-	6	6	6	6	6	6	
G	8	7	2	6	5	4	-	2	7	1	5	7	8
H	1	-	-	-	-	-	-	5	2	-	8	2	
2nd Fil													
	2	1	7	7	6	5	4	4	2	7	1	4	1

The "A" toggle switch is never used except to short check for heater to cathode leakage and during the emission check it must be in the "OUT" position. On tubes having center tap filaments or heaters, the "A" toggle must be placed in the "IN" position at all times except as noted under paragraph 3-6.

4-2. It is also necessary to determine whether the filament connections are normal or not for the type of base used. If the filament connections are not normal, the following rule should be used. On the octal base tubes, if one of the filament connections is on pin 2 and the other end of the filament on any other pin, the tube should be checked in the regular octal socket, provided no element other than heater, falls on pin 7. If on an octal based tube, one of the filament connections terminates at 7 and the other end of the filament terminates at any other pin (except pin # 2) the octal "A" socket should be used, provided no element other than heater, falls on pin 8.

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4-3. On octal tubes, if one filament connection terminates at pin 1 and the other on any other pin, the tube should be checked in the regular octal socket, provided no element other than heater, falls on pin 8. If a loctal based tube has one end of its filaments connected to pin 2 and the other end to any other pin (except pin # 1) the loctal "A" socket should be used, provided no element other than heater, falls on pin 8.

4-4. On a miniature based tube, if one end of the filament terminates on pin 7 and the other end on any other pin, the tube should be checked in the regular miniature socket, provided no element other than heater, falls on pin 1. If a miniature based tube has one end of its filament connected to pin 4 and the other end to any other pin (except pin # 7) the tube should be checked in the miniature "A" socket, provided no element other than heater, falls on pin 3.

4-5. On 9 pin miniature tubes, if one end of the filament terminates on pin #4 and the other end of the filament terminates on any other pin, the tube should be checked in the regular socket providing that no element other than heater falls on pin #5. If on a 9 pin miniature tube, one end of the filament terminates on pin #1 and the other end of the filament on any pin except pin #4, the 9 Pin Miniature "A" socket should be used provided no element of the tube other than heater, falls on pin #9.

4-6. If on octal, loctal, 7 pin or 9 pin tubes, none of the above rules hold, this company should be contacted for further information.

4-7. All of the other tubes are checked in sockets corresponding to their pin arrangement and so no difficulty will be experienced with these types.

CAUTION: Any tube having a center tap filament should have the "A" toggle switch indexed to the "IN" position before inserting a tube in the socket.

4-8. In determining the "FILAMENT SELECTOR" position, refer to the table below and select the position that most nearly corresponds to the rated filament voltage of the tube.

Fil. Sel.	Fil. Volts	Fil. Sel.	Fil. Volts
1	1.5	8	12.
2	2.0	9	27.5
3	2.5	10	35.0
4	3.3	11	47.0
5	5.0	12	70.0
6	6.3	13	85.0
7	7.5	14	100.

4-9. Do not fail to take into account the type of tube that is to be tested. In other words, diode, battery, normal, and special types. The diode position is used for diode types and for those battery types on which the load on the tube is too great. Whether the load is too great or not can be easily determined by placing the tube in the socket and indexing the circuit selector to the "BAT." position. If the meter indication begins to drop off, the load placed upon the tube is too great and the diode position should be used instead.

4-10. The battery position will be used for those tubes having more than two elements and having filament voltages corresponding to the 1.4 or 2.0 volt types. Center tapped filament tubes with ratings of 2.8 and 4 volts fall under this same classification.

4-11. The "SPECIAL" position should be used only on tubes of the rectifier type, such as the OZ4, 5U4-G, etc.

4-12. All other types should have the circuit selector indexed to the "NORMAL" type position during test.

4-13. After determining the "CIRCUIT SELECTOR" and "FILAMENT SELECTOR" positions, and the toggle switches to be used, it is then necessary to rotate the "TUBE SELECTOR" control until the meter indicates approximately 36 on the 50 line DC. scale. Several tubes known to be good should be used for determining the "TUBE SELECTOR" position. All "DIODE" types should have the tube selector set to "0." Although this procedure will not give accurate tube test data, it will suffice for a large number of tubes.

4-14. When determining the data for a new tube, if it is noted that the base connections are the same as a tube listed in the tube data, then follow paragraphs 4-6 through 4-11 for setting up the "CIRCUIT SELECTOR," "FILAMENT SELECTOR" and "TUBE SELECTOR." The toggle switches to be used and the symbols following the tube type number would then be the same as for the tube already listed on the data chart.

4-15. Note that the chart given under paragraph 4-1 can also be used as a wiring diagram for tube sockets. For instance, if a tube checker lacks a regular 9 pin socket, either an adapter can be made or a socket installed, connecting pin #1 of the 9 pin socket to pin #3 of the regular octal socket, and pin #2 to pin #4 of the 9 pin and octal sockets respectively. In other words, when looking at the chart the connections between sockets are made by connecting together the pin # going across the chart. For example: Pin #7 on Regular octal connects to pin #8 on Regular loctal, and connects to pin #1 on Regular 7 prong miniature and connects to pin #1 on large and small 7 prong combination socket, etc.

4-16. Adapters can be made for those Models having insufficient space on the panel for additional sockets.

The adapters come unwired and can be supplied by the American Phenolic Co. through your jobber. These parts cannot be obtained through Weston. It is suggested that any adapters made have an octal base and a top socket corresponding to the pin arrangement of the tube to be checked. The adapters should also be wired in such a manner that they are used in the regular octal socket of the tube checker. Following this procedure will eliminate difficulties due to placing an adapter in an incorrect socket.

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V. CONTROLS

5-1. **LINE VOLTAGE CONTROL.** This control is a 25 watt vitreous potentiometer for adjusting all potentials in the tube checker. It should be set after the tube is placed in the socket with the **CIRCUIT SELECTOR** switch indexed to the "LINE SHORT CHECK" position. This adjustment can be rechecked from time to time by rotating the **CIRCUIT SELECTOR** switch to this position and noting the meter reading.

5-2. **FILAMENT SELECTOR.** This multiple position switch controls the heater potential supplied to all sockets. The setting of this switch should correspond to the number called for on the tube data card, and this switch should always be set to the required position before placing the tube in the socket.

5-3. **TUBE SELECTOR.** This is located directly under the instrument. It controls the shunt network for the instrument and should be set in accordance with the reading on the tube data chart before inserting the tube in the socket.

5-4. **CIRCUIT SELECTOR.** This is a master switch which sets up the correct circuits for the particular tube type and measurement to be taken. Note that this also has an "OFF" position for turning off the tube tester itself. When the device is not in use, this switch should be returned to the "OFF" position at all times. When testing a tube, set this switch first to the "LINE SHORT CHECK" position, place the tube in the socket, correct the line voltage adjustment if necessary, and rotate the switch to the required position for the type of tube being tested.

5-5. **ELECTRODE SWITCHES.** These are all distinguished by their molded red bakelite handles. By using independent switches a very high order of flexibility is available and individual element short and continuity tests are thus made available. These switches should be set in accordance with the readings on the tube data card to the "IN" position for tube test readings. For short test readings these switches should be operated one at a time while watching the neon lamp. For all cathode leakage indications, the "A" switch only is used. All switches not in use should be kept in the "OUT" position.

5-6. **NORMAL-REVERSE SWITCH.** A meter reversing toggle switch with a nickel plated handle is mounted alongside the electrode switches, next to the "H" switch. This is marked "NORM.-REV." This switch is kept in the normal position when testing most of the tubes. On certain types where the plate of the tube is connected to one side of the filament, this switch must be indexed to the reverse (REV.) position to obtain a test reading on the rectifier section. These tubes are marked by a "¶" on the tube data card.

5-7. On the Model 773, toggle switches perform the function of the Circuit Selector in the other types. These toggles are to be used as formerly except that the symbols engraved on the panel are not to be used. The abbreviations, however, are followed for selecting Diode, Bat., or Normal tube types. Those tubes in the data list calling for a "Spec." position are handled by an additional toggle located in the former position of the "Noise" jack. This switch should be indexed to the right for the "Spec." position.

Should this device fail to function, examine the two fuses in the plug to make sure that these provide a through circuit. These fuses can be removed by pushing a lead pencil through the small hole in the back of the plug and thus forcing the fuse out through the hole in the front of the plug next to the prongs. The fuses are 1 ampere and may be replaced by a standard 1 ampere automobile fuse or the spare fuse supplied with each model. Should the device still fail to function as indicated by no line check reading, remove the panel screws and lift the complete tester out of its case.

Remove the 71-A, 5Y3-G or the 3A4 tube (depending upon the model type number) mounted along side of the transformer. Test this tube and replace if not in good condition. This should correct the trouble when the device fails to give a line check indication.

If the tube checker gives a very high reading on all tubes the line voltage adjustment should be checked as follows:

Index the **FILAMENT SELECTOR** to 7 and with an AC meter of known accuracy check the filament voltage at one of the sockets rotating the line voltage control, with the **CIRCUIT SELECTOR** in the **SHORT TEST** position, until the pointer indicates at the line check mark. The indication on the AC meter should not be lower than 7.4 volts nor higher than 7.55 volts. If so, the line check resistor should be adjusted until the line check reads correctly.

In lieu of adjusting the line check resistor a new line check point on the scale can be determined by using the following procedure. Index **FILAMENT SELECTOR** to 7, **CIRCUIT SELECTOR** to **LINE SHORT CHECK** and with an a-c meter of known accuracy connected to the filament contacts, rotate the **LINE ADJUSTER** until the a-c meter indicates exactly 7.5 volts. Note the position of the pointer and use this point as the new **LINE CHECK** position. Accurate results from these tube checkers require that the **LINE CHECK** be correct.

The tester can then be replaced in the case and the panel screws fastened down in position.

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Tube Type	Fil. Sel.	Tube Sel.	"IN" Position	Tube Type	Fil. Sel.	Tube Sel.	"IN" Position	Tube Type	Fil. Sel.	Tube Sel.	"IN" Position
1A3 8 DL	1	0	FG	4A6-G Bat. †	4	24	ABC & ADF	6J6 *††	6	44	BF & DG
1A7-G Bat.	1	26	BCDEF					6J7 *	6	41	BCDE
1A7 Bat.	1	26	BCDEF					6J8-G *	6	44	BCDEF
1B3/8016 Spec. #	0	35	E					6K5-G *	6	42	BE
1C5-GT Bat.	1	26	BCD					6K6-GT *	6	42	BCD
1C7-G Bat.	2	23	BCDEF	5R4-GY Spec.	5	45	C & F	6K7 *	6	40	BCDE
1D7 Bat.	2	18	BCDEF	5T4 Spec.	5	45	C & F	6K8 *	6	44	BCDEF
1D8-GT Bat.	1	22	BCD	5U4-G Spec.	5	45	C & F	6L5-G *	6	41	BD
1D8-GT Bat.	1	15	EF	5V4-G Spec.	5	45	C & F	6L6 *	6	43	BCD
1D8-GT DI.	1	0	G	5W4 Spec.	5	45	C & F	6L7 *	6	43	BCDE
1E5-GP Bat.	2	20	BCE	5X4-G †† Spec.	5	45	B & D	6N6-G *	6	40	BCD
1F6-G Bat.	2	19	BCE	5Y3-G Spec.	5	45	C & F	6N7 *	6	41	BC & DF
1F6-G DI.	2	0	F & G	5Y4-G †† Spec.	5	45	B & D	6P5-G *	6	39	BD
1F7-GV Bat.	2	19	BDF	5Z3 Spec.	5	45	B & C	6P7-G *	6	40	CDE
1F7-GV DI.	2	0	C & D	5Z4 Spec.	5	45	C & F	6Q6 *	6	41	BE
1G5 Bat.	2	25	BCD					6Q6 DI.	6	0	D
1G6-G Bat.	1	23	BC & DF					6Q7 *	6	42	BE
1H5-GT Bat.	1	18	BE					6Q7 DI.	6	0	C & D
1H5-GT DI.	1	0	D	6A7 *	6	42	BCDEF	6R6 *	6	40	BDE
1L4 Bat.	1	25	BGF	6A8 *	6	43	BCDEF	6R7 *	6	41	BE
1LA4 Bat.	1	21	BCF	6AB5/6N5 *	6	33	BCF	6R7 DI.	6	0	C & D
1LA6 Bat.	1	19	BCDEF	6AB6-G *	6	37	BCD	6S7 *	6	41	BCDE
1LB4 Bat.	1	22	BCF	6AB7/1853 *	6	44	BCFG	6S8-GT *††	6	42	EF
1LC5 Bat.	1	25	BCDF	6AC5-G *	6	42	BCD	6S8-GT DI. *††	6	0	B & C & G
1LC6 Bat.	1	17	BCDEF	6AC6 *	6	31	BCD	6SA7 *	6	44	BCDGH
1LD5 Bat.	1	21	BCF	6AC7/1852 *	6	45	BCFG	6SA7-G *	6	44	BCDGH
1LD5 DI.	1	0	D	6AD7-G *	6	41	BCD	6SB7-Y *	6	45	BCDG
1LE3 Bat.	1	24	BF	6AD7-G *	6	41	BCD	6SC7 †† *	6	40	RH & CD
1LG5 Bat.	1	25	BCDF	6AE5-G *	6	42	BDF	6SD7 *	6	44	BCFG
1LH4 Bat.	1	18	BF	6AE6-G *	6	41	BCD	6SF5 †† *	6	43	BD
1LH4 DI.	1	0	D	6AE7-GT *	6	43	BCD	6SF7 †† *	6	41	CFH
1LN5 Bat.	1	24	BCDF	6AF5 *	6	43	BCD	6SF7 DI. ††	6	0	D
1NS-GT Bat.	1	26	BCE	6AG5 Bat. *††	6	33	BDF	6SG7 *	6	45	CFG
1NS Bat.	1	26	BCE	6AG7 *	6	43	BDF	6SH7 *	6	45	CFG
1NG-G Bat.	1	21	BCD	6AH6 *††	6	45	CFGH	6SJ7 *	6	42	BCFG
1NG-G DI.	1	0	F	6AH7 *††	6	41	BDFG	6SK7 *	6	42	BCFG
1P5-GT Bat.	1	22	BCE	6AJ5 *††	6	45	BG & DF	6SL7 †† *	6	41	CD & GH
1Q5-GT Bat.	1	28	BCD	6AK5 *††	6	45	BDF	6SN7 †† *	6	43	CD & GH
1R4/1294 DI.	1	0	D	6AK5 *††	6	45	BDF	6SQ7 †† *	6	41	FH
1R5 Bat.	1	25	BCFG	6AK6 *††	6	42	BDFG	6SQ7 DI. ††	6	0	C & D
1S4 Bat. 8	1	26	BCFG	6AL5 *††	6	45	C & G	6SR7 †† *	6	41	FH
1S5 Bat.	1	18	CDF	6AL6 *	6	44	CDE	6SR7 DI. ††	6	0	C & D
1S5 DI.	1	0	B	6AQ5 *††	6	46	BCDF	6SS7 *	6	42	BCFG
1SA6-GT Bat.	1	24	BCFG	6AQ6 *††	6	42	BC	6ST7 †† *	6	41	FH
1SB6-GT Bat.	1	21	BCG	6AQ6 DI. *††	6	0	D & F	6ST7 DI. ††	6	0	C & D
1T4 Bat.	1	25	BFG	6AQ7 *††	6	42	CD	6T5 *	6	36	BCF
1T5-GT Bat.	1	22	BCD	6AQ7 DI. ††	6	0	B & G	6T7-G *	6	40	BE
1U4 Bat.	1	25	BFG	6AS5 *†††	6	44	CDFG	6T7-G DI.	6	0	C & D
1U5 Bat.	1	17	BFG	6AS6 *††	6	45	BCDF	6T8 *	6	42	EH
1U5 DI.	1	0	C	6AS7-G *††	6	45	CD & GH	6T8 DI. *	6	0	B & C & F
1-V *	6	43	B	6AT6 *††	6	43	BC	6U6/6G5 *	6	37	BCF
				6AT6 DI. *††	6	0	D & F	6U6-G *	6	44	BCD
				6AU6 *††	6	45	BDFG	6U7-G *	6	41	BCDE
				6AX5 †† *	6	45	BDF	6V6 *	6	42	BCD
				6B7 *	6	37	BCE	6V7-G *	6	37	BE
				6B7 DI.	6	0	D & F	6V7-G DI.	6	0	C & D
2A3	3	43	BC	6B8 *	6	38	HEF	6X4 *††	6	41	B & F
2A5 *	3	41	BCF	6B8 DI.	6	0	C & D	6X5 Spec. *	6	45	B & D
2A6 *	3	42	BE	6BA6 *††	6	45	BDFG	6Y5 Spec. *	6	45	B & G
2A6 DI.	3	0	C & F	6BA7 *	6	45	BCDF	6Y6-G *	6	45	BCD
2A7 *	3	41	BCDEF	6BE6 *††	6	45	BCDF	6ZY5 Spec. *	6	45	R & D
2B7 *	3	35	BCE	6BF6 *††	6	41	BC				
2B7 DI.	3	0	D & F	6BF6 DI. *††	6	0	D & F				
2C22 00*	6	43	E	6BG6-G *	6	44	DEC				
2E22	6	44	BCEG	6BH6 *††	6	44.5	BCDF				
2X2 Spec.	3	41	E	6BJ6 *††	6	44	BCDF				
				6C4 ††*	6	42	BDF	7A4 *	6	43	BF
				6C5 *	6	41	BD	7A5 *	6	44	BCF
				6C6 *	6	41	BCDF	7A6 DI. *	6	0	C & F
				6C7 *	6	41	BE	7A7 *	6	43	BCDF
				6C7 DI.	6	0	D & F	7A8 *	6	42	BCDEF
				6C8-G *	6	41	BE & DF	7AD7 *	6	44	BCDF
3A4 †8 Bat.	3	30	ABCDFG	6D6 *	6	41	BCDF	7AF7 *	6	41	CD & EF
3A5 † Bat.	3	29	ABG & ADF	6D7 *	6	42	BCDE	7AG7 *	6	45	BCDF
3A8-GT Bat. †	3	24	ABCE	6D8-G *	6	40	BCDEF	7AH7 *	6	45	BCDF
3A8-GT Bat. †	3	20	ADF	6E5 *	6	36	BCF	7AK7 *	6	41.5	BCDF
3A8-GT DI. †	3	0	AG	6E6 *	6	40	BC & FG	7B4 *	6	43	BF
3B5-GT Bat. †	3	26	ABCD	6E7 *	6	42	BCDE	7B5 *	6	42	BCF
3C5 Bat. †	3	27	ABCD	6F5 *	6	43	CE	7B6 *	6	42	BC
3LE4 Bat.	3	28	BCF	6F6 *	6	41	BCD	7B6 DI.	6	0	E & F
3LF4 † Bat.	3	32	APCFG	6F8-G *	6	42	BE & DF	7B7 *	6	42	BCDF
3Q4 Bat. †8	3	28	ABCDFG	6G6 *	6	42	BCD	7B8 *	6	42	BCDEF
3Q5-GT Bat. †	3	28	ABCD	6H4-G DI. *	6	0	C	7C4/1203A *	6	36	D
3S4 Bat. †8	3	28	ABCDFG	6H6 *	6	39	B & D	7C5 *	6	43	BCF
3V4 Bat. †	3	28	ABFG	6J4 * †† †	6	46	BCDF	7C6 *	6	40	BC
				6J5 *	6	42	BD	7C6 DI.	6	0	E & F

TEST DATA FOR WESTON EMISSION TUBE TESTERS

Tube Type	Fil. Sel.	Tube Sel.	"IN" Position	Tube Type	Fil. Sel.	Tube Sel.	"IN" Position	Tube Type	Fil. Sel.	Tube Sel.	"IN" Position
7C7 *	6	41	BCDF	14S7 *	8	45	BCDEF	75 *	6	41	BE
7E6 *	6	42	BC	14W7 *	8	45	BCEF	75 DI.	6	0	C & F
7E6 DI.	6	0	E & F	14Y4 Spec. *	8	45	C & F	76 *	6	39	BC
7E7 *	6	40	BEF	14Z3 Spec. *	8	45	B	77 *	6	41	BCEF
7E7 DI.	6	0	C & D					78 *	6	41	BCEF
7F7 *	6	41	CD & EF	24-A *	3	40	BCE	80 Spec.	5	45	B & C
7G7/1232 *	6	45	BCDF					81	7	29	B
7F8 * †	6	45	BH & FG	25A6 *	9	42	BCD	82	7	43	B & C
7G8/1206 *	6	32	BCD & CEG	25A7-G *	9	41	BCD	83	5	45	B & C
7H7 *	6	45	BCDF	25A7-G *	9	44	F	84/5Z4 Spec. *	6	45	B & C
7J7 *	6	44	BCDEF	25AC5 *	9	42	BD	85 *	4	37	BE
7K7 *	6	42	CD	25L6-G *	9	45	BCD	85 DI.	6	0	C & F
7K7 DI.	6	0	E & F	25Z5 Spec. *	9	45	B & G				
7L7 *	6	41	BCDF	25Z6 Spec. *	9	45	B & D	117L7-GT *	14	43	BCD
7N7 *	6	43	CD & EF	26	1	36	BC	117L7-GT Spec. * †	14	45	F
7Q7 *	6	44	BCDEF	26A6 * ††	9	48	BDFG	117N7-GT *	14	44	BCD
7R7 *	6	44	BEF	26C6 * ††	9	40	BC	117N7-GT Spec. †	14	45	G
7R7 DI.	6	0	C & D	26C6 DI. * ††	9	0	D & F	117P7-GT *	14	44	BCD
7S7 *	6	45	BCDEF	26D6 * ††	9	45	BCDF	117P7-GT Spec. †	14	45	G
7V7 *	6	45	BCDF	27 *	3	39	BC	117Z3 Spec. * ††	14	45	BD
7W7 *	6	45	BCEF	28D7 *	9	44	BCD & CEG	117Z4-GT Spec. * †	14	44	D
7X7/XXFM *	6	45	BC					117Z6-GT Spec. * †	14	44	B & D
7Y4 Spec. *	6	45	C & F	35A5 *	10	44	BCF	OZ4 Spec.	1	45	B & D
7Z4 Spec. *	6	45	C & F	35B5 * †† Δ	10	45	BCDF	XXD *	8	41	CD & EF
				35C5 * †† †	10	44.5	CDFG	XXFM DI.	6	41	BC
10	7	38	BC	35L6-GT *	10	44	BCD	XXFM DI.	6	0	E & F
				35W4 Spec. † † †	10	45	AD	XXL *	6	43	BF
12A8-GT *	8	42	BCDEF	35Y4 Spec. †	10	45	AB				
12AH7 * ††	8	41	BG & DF	35Z3 Spec. *	10	45	B				
12AL5 * ††	8	45	C & G	35Z4-GT Spec. *	10	45.5	D				
12AT6 * ††	8	43	BC	35Z5-GT Spec. †	10	45.5	AD				
12AT6 DI. * ††	8	0	D & F	35Z6 Spec. *	10	45	B & D				
12AT7 †	8	45	ABC & AFG								
12AU7 †	8	43	ABC & AFG	35/51 *	3	40	BCE				
12AX7 †	8	44.5	ABC & AFG	36 *	6	40	BCF				
12BA6 * ††	8	45	BDFG	37 *	6	39	BC				
12BA7 *	8	45	BCEF	38 *	6	39	BCE				
12BE6 * ††	8	45	BCDF	39/44 *	6	41	BCE				
12BF6 * ††	8	41	BC								
12BF6 DI. * ††	8	0	D & F	41 *	6	42	BCF				
12F5-GT *	8	42	BE	42 *	6	41	BCF				
12H6 *	8	39	B & D	43 *	9	43	BCF				
12J5-GT *	8	42	BD								
12J7-GT *	8	42	BCDE	45Z3 Spec. * †	11	45	FG				
12K7-GT *	8	41	BCDE	45Z5-GT Spec. †	11	45	AD				
12K8-GT *	8	44	BCDEF								
12Q7-GT *	8	42	BE	45	3	41	BC				
12Q7-GT DI.	8	0	C & D	50A5 *	11	45	BCF				
12SA7 *	8	44	BCDGH	50B5 * †† Δ	11	45	BCDF				
12SC7 ††	8	41	BH & CD	50C5 * †† †	11	44.5	CDFG				
12SF5 ††	8	43	BD	50C6 *	11	44	BCD				
12SF7 ††	8	41	CFH	50L6-GT *	11	45	BCD				
12SF7 DI. ††	8	0	D	50X6 Spec. *	11	46	C & F				
12SG7 *	8	45	CFG	50Y6-GT Spec. * †	11	45	B & D				
12SH7 *	8	45	CFG	50Z6 Spec. * †	11	45	B & D				
12SJ7 *	8	42	BCFG	50Z7 Spec. †	11	45	AB & AD				
12SK7 *	8	42	BCFG								
12SL7 * ††	8	41	CD & GH	50	7	37	BC				
12SN7 * ††	8	43	CD & GH	53 *	3	41	BC & FG				
12SQ7 †† *	8	41	FH	55 *	3	37	BE				
12SQ7 DI. ††	8	0	C & D	55 DI.	3	0	C & F				
12SR7 †† *	8	41	FH	56 *	3	41	BC				
12SR7 DI. ††	8	0	C & D	57 *	3	42	BCEF				
				58 *	3	42	BCEF				
				59 *	3	40	BCDF				
14A4 *	8	43	BF	70A7-GT †	12	45	BCD				
14A5 *	8	42	BCF	70A7-GT Spec. †	12	45	G				
14A7 *	8	42	BCDF	70L7-GT Spec. * †	12	45	BCD				
14AF7/XXD *	8	41	CD & EF	70L7-GT Spec. * †	12	45	G				
14B6 *	8	42	BC								
14B6 DI.	8	0	E & F								
14B8 *	8	42	BCDEF								
14C5 *	8	43	BCF								
14C7 *	8	43	BCDF								
14E6 *	8	42	BC								
14E6 DI.	8	0	E & F								
14F7 *	8	42	CD & EF								
14F8 * †	8	45	BH & FG								
14H7 *	8	45	BCDF								
14J7 *	8	44	BCDEF								
14N7 *	8	43	CD & EF								
14Q7 *	8	44	BCDEF								
14R7 *	8	44	BEF								
14R7 DI.	8	0	C & D								

Symbols

- § When testing for open elements or short checking, F&G toggles should be thrown to the "IN" and "OUT" positions together.
- ° Same holds for toggles B&D. See first note.
- §§ The same hold for toggles D&G. See first note.
- ∇ The same holds for toggles B, D & F. See first note.
- △ The same holds for toggles B & C. See first note.
- # For 774-4 & 5 and 685-3 & 3A only. Use Fil. Sel. "1" on all other models and an adapter with a 1.5 ohm resistor placed in one of the filament leads.
- ‡ An adapter, octal top, octal bottom, wired straight through, is required and it should be placed in "regular" octal socket.
- ** Reject Point is 16 on 50 Line DC Arc.
- † Index switch "A" to "IN" position before inserting tube; keep in this position during complete test. A lighted neon lamp will indicate continuity of third filament connection. No short test; refer to instructions.
- * Test for cathode leakage by throwing "A" switch to "IN" position when tube is hot; all other switches should be in the "OUT" position.
- †† Test in "A" socket.
- ‡ Place "Norm." "Rev." toggle in "Rev." position to short check, index "A" toggle to "IN" position, leaving "G" in the "IN" position.
- ‡‡ Place "Norm." "Rev." toggle in the "Rev." position.
- & Move grid lead to the cap that gives the higher reading.
- °° Tie both top caps together.
- When testing for open elements or short testing, B&H toggles should be thrown to the "IN" and "OUT" positions together. The same holds for C&G toggles. Check for cathode leakage.

6A05 44 1/2 DGH

SUPPLEMENTARY TEST DATA FOR WESTON EMISSION TUBE TESTERS

Tube Type	Fil. Sel.	Tube Sel.	"IN" Position	Tube Type	Fil. Sel.	Tube Sel.	"IN" Position	Tube Type	Fil. Sel.	Tube Sel.	"IN" Position
01A	5	36	BC	6G7-S Di.	6	0	D & G	25D8 *	9	42	DF
1A4-P Bat.	2	22	BCE	6H7-S *	6	41	BCD	25D8 Di.	9	0	G
1A5-GT Bat.	1	21	BCD	6H7-S *	6	25	EF	25N6 G *	9	40	BCD
1A6 Bat.	2	18	BCEFG	6N5 *	6	31	BCF	25X6 *	9	44	B & D
1B4-P Bat.	2	21	BCE	6W5-G *	6	43	B & D	25Y5 Spec. *	9	45	B & G
1B5/25S Bat.	2	17	BG	6W6 *	6	45	BCD	25Z3 Spec. *	9	45	B
1B5/25S Di.	2	0	C & F	6W7-G *	6	42	BCDE				
1B7 Bat.	1	19	BCDEF	6Y7 *	6	42	BC & DF				
1C6 Bat.	2	23	BCEFG	6Z3 *	6	43	B	30 Bat.	2	19	BC
1D5-GP Bat.	2	21	BCE	6Z7-G *	6	42	BC & DF	31 Bat.	2	19	BC
1E4-G Bat.	1	23	BD								
1E7-G Bat.	2	25	BCG & DFG								
1F4 Bat.	2	24	BCG								
1F5-G Bat.	2	26	BCD								
1G4-G Bat.	1	23	BD	12-A	5	40	BC	32L7 *	9	42	BCD
1H4-G Bat.	2	18	BD	12A5 †	8	42	ABCD	32L7 *	9	43	F
1H6-G Bat.	2	19	BF	12A6 *	8	42	BCD				
1H6-G Di.	2	0	C & D	12A7 *	8	38	BCE				
1J5 Bat.	2	22	BCD	12A7 *	8	43	F	32 Bat.	2	20	BCE
1J6-G Bat.	2	23	BC & DF	12B7 *	8	42	BCDF	33 Bat.	2	24	BCG
1R4/1294 Di.	1	0	D	12B8-GI *	8	43	BCE	34 Bat.	2	20	BCE
				12B8-GT *	8	44	DG				
2B6 *	3	41	BDF	12C8 *	8	38	BEF				
2E5 *	3	32	BCF	12C8 Di.	8	0	C & D				
2G5 *	3	34	BCF	12E5-GT *	8	41	BD	46	3	40	BCG
2W3	3	34	C	12Z3 *	8	44	B	47	3	40	BCG
				12Z5/6Z5 †	8	39	AB & AG	48 *	9	43	BCF
3B7/1291 Bat. †	3	30	ABC & AFG								
6A3	6	43	BC	15 Bat.	2	16	BCE	71-A	5	40	BC
6A4/LA	6	39	BCG	18 *	8	42	BFC	79 *	6	47	BC & EG
6A5-G †	6	44	ABD	19 Bat.	2	20	BC & FG	82V	3	43	B & C
6A6 *	6	41	BC & FG					83V	5	43	B & C
6B4-G	6	42	BD					88M *	6	40	BCDE
6B5 *	6	36	BCF	25B5 *	9	41	BCF	89 *	6	40	BCEF
6B6 *	6	41	BE	25B6-G *	9	44	BCD				
6B6 Di.	6	0	C & D	25B8-GT *	9	43	BCE				
6F7 *	6	38	BCE	25B8-GT *	9	44	DG	183	5	39	BC
6F7 *	6	24	DF	25C6-G *	9	45	BCD	231-D Bat.	3	14	BC
6G7-S *	6	37	BE	25D8 *	9	43	BCE	239-A Bat.	1	14	BC

