Description	Part No.	Dir. Net
Lock with keys	3300-267	4.80
Meter	2500-020	19.50
Panel, Base	1700-050	16.50
Panel, control for Power Supply	1800-064	1.80
Panel, Meter	1800-062	10.00
Panel, Socket	1800-063	17.00
Pin Straightener	3300-251	1.65
Plug	2001-013	1.00
Plug	2001-038	1.00
Receptacle, one pin	2000-014	.65
Resistor Board	2003-014	2.40
Roller, Chart Top	3300-258	1.95
Roller, Chart Bottom	3300-259	1.95
Sign, "Free Test"	1801-026	6.90
Sign, Instruction	1801-025	1.95
Sleeving, Black	2800-025	.40
Socket, Compactron	1600-056	.50
Socket, Lamp	2400-032	.55
Socket, Lamp Fluorescent	1600-048	.60
Socket, Loctal	1600-053	.80
Socket, Starter	1600-049	.80
Socket, Octal	1600-023	.25
Socket, Novar	1600-051	.35
Socket, 7 Pin	1600-057	.30
Socket, Nuvistor 5 Pin	1600-055	.55
Socket, Nuvistor 7 Pin	1600-046	1.00
Socket, 9 Pin	1600-058	.40
Socket, 10 Pin	1600-054	.50
Socket, Female 36 Pin	2000-012	6.80
Spacer	3300-262	.40
Strain Relief (used on Power Supply Ass'y)	3200-006	.15
Strain Relief (used on Socket Panel)	3200-015	.15
Strain Relief (used on Base Cabinet Ass'y)	3200-017	.15
Switch Button, Red	3300-263	.65
Terminal Strip, 1 lug	2002-006	.10
Terminal Strip, 8 lugs	2002-026	.15
Terminal Strip, 6 lugs	2002-033	.15
Terminal Strip, 4 lugs	2002-031	.15
Tube dividers for Miniature Type Tubes	3301-048	1.60
Tube dividers for GT Type Tubes	3301-049	1.50
Tube dividers for G Type Tubes	3301-050	1.35
Washer, Extruded	3100-015	.03
Window, chart	1801-027	3.25
Window (below sign)	1801-024	1.25

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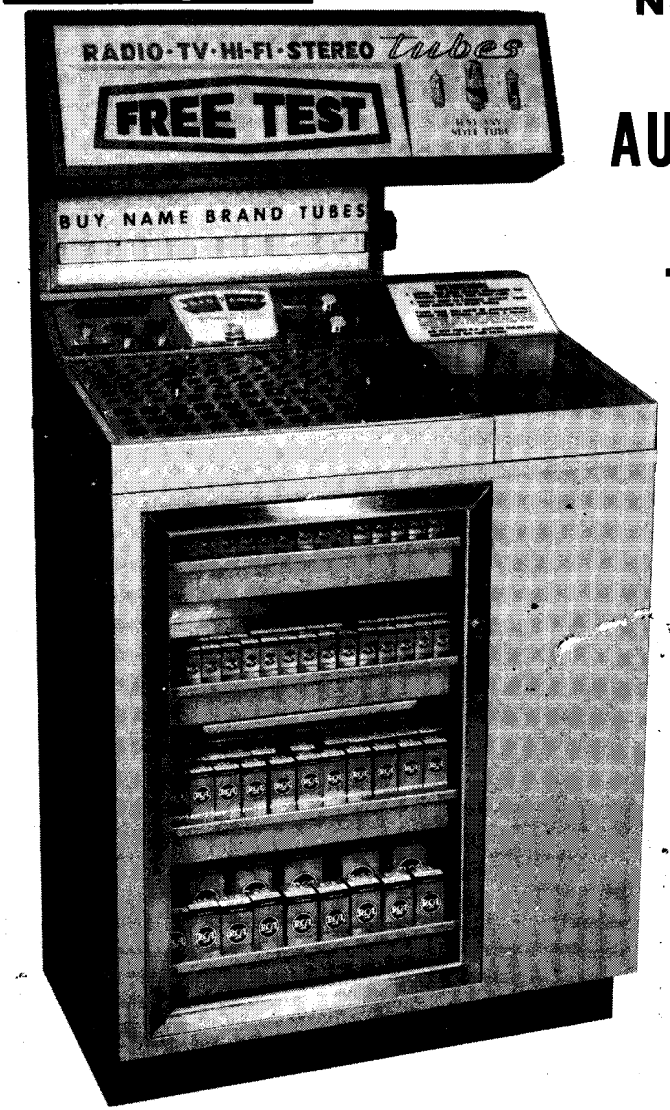
GC ELECTRONICS

INSTRUCTION MANUAL

for No. 36-800



AUTOMATIC TUBE TESTER

Form FR-087-C

GC ELECTRONICS COMPANY
DIVISION OF TEXTRON ELECTRONICS, INC.
WESTERN PLANT: LOS ANGELES 18, CALIFORNIA — MAIN PLANT: ROCKFORD, ILLINOIS, U.S.A.

36-800 Automatic Tube Tester

Description

The circuit of the Automatic Tube Tester Model 36-800 contains five relays to provide the maximum in automated tube testing while maintaining the utmost in simplicity for the user. This unit will test all the latest tubes, including nuvistors both 7 pin and 5 pin, compactrons, novars, 9 pin tubes, 10 pin tubes, octal tubes, 7 and 9 pin miniature tubes. Short and leakage controls are fully adjustable. The unit will detect grid-cathode leakage up to 6 megohms or a short between filament and cathode up to 500,000 ohms. These two adjustments are independent of each other. A unique leakage and quality test is provided for multi-section tubes. The tube elements are connected in parallel during the leakage test and the sections are connected in series during the emission test. If either section of the tube is defective in either test it will be indicated on the meter panel.

The 36-800 Automatic Tube Tester has basically two cycles of operation. During the first cycle the tube filament is preheated and the tube is checked for shorts and leakage. During the second cycle the tube is given a quality check which is indicated on the meter. This unit includes a pin straightner for all tube types listed above. This unit also tests auto radio vibrators, fuses, and pilot lamps.

Using the Model 36-800

To test a tube in this unit, one should follow the following simple steps.

1. Find the correct socket opposite your tube type number on the convenient roll chart.
2. Insert your tube into the appropriate socket.
3. Depress the start button fully and release.

That's all there is to it. The tube tester automatically tests your tubes for shorts, leakage and efficiency. If the tube has either a short or excessive leakage the appropriate light on the tester will be triggered and will stay on. At this time a flashing sign to the right of the tester will be activated calling the customer's attention to the fact that the tube is bad. The tester automatically shuts off at the end of the first cycle to prevent possible meter damage due to a shorted tube. When the tube passes the first part of the cycle, the tube tester commences the quality check. At this time the customer reads the meter. A good tube will indicate in the green region. If the tube indicates in the red area or in the questionable area the tube is either bad or weak, respectively, and should be replaced.

Fuses and pilot lamps can be tested without activating the start button. The fuse or lamp is placed across the test block located in the lower left hand corner of the meter panel. If the fuse or pilot lamp is good, the light associated with the fuse block will glow.

Auto radio vibrators are tested by plugging them into the appropriate socket just to the left of the meter and pushing the start button. If both lamps associated with the vibrator test glow at approximately equal brilliance, then the vibrator is good. If only one lamp glows and the other one is completely out this indicates that the vibrator is shorted and should be replaced. Slight differences in the lamp brilliance may indicate that the vibrator has had some wear, however, the vibrator may not yet need replacing.

Schematic No.	Description			Part No.	Dlr. Net
P-2	Connector Plug (Meter Panel Cable Ass'y)			2001-027	3.00
P-3	Interlock Plug			2001-032	.40
P-4	Tip Plug (on Socket Panel Ass'y)			2001-035	1.60
P-5	Interlock Connector & Cord (to 115VAC)			2001-029	.85
RLY-1	Relay	5K	3PDT	3500-021	8.90
RLY-2	Relay	5K	3PDT	3500-021	8.90
RLY-3	Relay	10K	3PDT	3500-020	8.90
RLY-4	Relay	10K	3PDT	3500-020	8.90
RLY-5	Relay	10K	3PDT	3500-020	8.90
S-1	3 position Rotary Switch			2100-065	
S-2	Test SPDT Switch			2104-001	1.02
S-3	SPDT Push Button Switch			2104-003	1.25
S-4	Switch, Toggle SPST			2101-013	1.35
S-5	Starter Switch			2102-006	.95
SO-1	Socket, Vibrator, 3 Prong			1600-052	.30
SO-2	Socket, Vibrator, 4 Prong			1600-034	.30
SO-3	Flashing Lamp Receptacle			2000-013	.65
SR-1	Silicon Diode, 200PIV			3700-150	1.20
SR-2	Silicon Diode, 200PIV			3700-150	1.20
SR-3	Silicon Diode, 200PIV			3700-150	1.20
SR-4	Silicon Diode, 200PIV			3700-150	1.20
T-1	Transformer			1200-027	16.50
V-1	Tube 6680			6680	2.35
V-2	Tube RCA 5964			5964	2.50
	Adapter			1600-050	.18
	Ballast			1200-028	1.60
	Bracket for Pin Straightener			1901-127	.80
	Cable Clamp			2007-012	.03
	Cabinet, Base			1700-049	165.00
	Chassis, Power Supply			1900-045	2.90
	Cord, Power (for Sign, 40")			2700-195	1.00
	Clamp, Fuse Test			3300-252	.95
	Door, Glass			3300-255	22.50
	Flasher Unit			2400-028	1.40
	Fuse			1500-003	.20
	Fuse Holder			1500-006	.40
	Grid Cap Leads			3300-265	3.20
	Grommet 9/16"ID (used on Power Supply Ass'y)			3200-016	.03
	Grommet 1/2" (used on Base Cabinet Ass'y)			3200-018	.03
	Insulator, Fuse Test			2200-022	.40
	Knob, Black			2600-041	.20
	Knob, Chart			2600-045	.20
	Knob, Red			2600-043	.20
	Knob, Walnut			2600-044	.20
	Knob, White			2600-042	.20
	Lamp, Appliance 100 watt			3800-015	1.00
	Lamp, Fluorescent			3800-014	1.80

Schematic No.	Description	Value			Part No.	Dlr. Net
R26	Resistor	10 ohm	10W	10%	1003-027	.50
R27	Resistor	10 ohm	10W	10%	1003-027	.50
R28	Resistor	13 ohm	10W	10%	1003-025	.50
R29	Resistor	7.5 ohm	10W	10%	1003-036	.50
R30	Resistor	2 ohm	10W	10%	1003-023	.50
R31	Resistor	5 ohm	10W	10%	1003-025	.50
R32	Resistor	3.3 ohm	10W	10%	1003-024	.50
R33	Resistor	2 ohm	10W	10%	1003-023	.50
R34	Resistor	1 ohm	10W	10%	1003-022	.50
R35	Resistor	1 ohm	10W	10%	1003-022	.50
R36	Resistor	10 ohm	1W	10%	1001-037	.20
R37	Resistor	820 ohm	2W	10%	1002-032	.30
R38	Resistor	8.2K	1W	10%	1001-012	.20
R39	Resistor	100K	1/2W	10%	1000-071	.15
R40	Resistor	100K	1/2W	10%	1000-071	.15
R41	Potentiometer	250K linear taper			2300-35	1.40
R42	Potentiometer	1.5 Meg linear taper			2300-034	1.10
R43	Resistor	47K	1/2W	10%	1000-066	.15
R44	Resistor	220K	1/2W	10%	1000-077	.15
R45	Resistor	8.2K	1W	10%	1001-012	.20
R46	Resistor	220K	1/2W	10%	1000-077	.15
R47	Potentiometer	1.5 Meg linear taper			2300-034	1.10
R48	Resistor	390K	1/2W	10%	1000-088	.20
R49	Potentiometer	250 ohm linear taper			2300-036	1.50

The following Resistors are on the Socket Panel and do not appear on the Schematic.

R50	Resistor	47K	1/2W	10%	1000-066	.15
R51	Resistor	47K	1/2W	10%	1000-066	.15
R52	Resistor	47K	1/2W	10%	1000-066	.15
R53	Resistor	47K	1/2W	10%	1000-066	.15
R54	Resistor	47K	1/2W	10%	1000-066	.15
R55	Resistor	500 ohm	5W	10%	1005-006	.50
R56	Resistor	3.3K	10W	10%	1003-034	.40
R57	Resistor	1/2 ohm	10W	10%	1003-039	.50
C-1	Capacitor	.01 MFD	400V	10%	1100-004	.40
C-2	Capacitor	8 MFD	450V	10%	1106-013	.95
C-3	Capacitor	8 MFD	450V	10%	1106-013	.95
C-4	Capacitor	8 MFD	450V	10%	1106-013	.95
C-5	Capacitor	80 MFD	150V		1106-046	1.80
DL-1	Indicator, Short Test				2400-030	3.50
DL-2	Indicator, Quality Test				2400-031	3.50
DL-3	Short Indicator				2400-024	1.20
DL-4	Leakage Indicator				2400-025	1.20
DL-5	Indicator Light		14V		2400-026	2.00
DL-6	Indicator Light		14V		2400-026	2.00
DL-7	Indicator Light		14V		2400-026	2.00
P-1	Connector Plug (on Resistor Bd. Cable Ass'y)				2001-028	3.20

Using the 36-800 Calibrator

The calibrator is used to properly adjust the Model 36-800 Automatic Tube Tester. The calibrator contains circuitry that is necessary to adjust the timing controls for the first and second cycles, for adjusting the short sensitivity control, the leakage sensitivity control, and for setting the meter adjust control to its proper position.

The electronics head of the Model 36-800 tube tester can be easily removed from the cabinet for calibration purposes by the following steps.

1. Remove the instruction sign window.
2. Remove the two plugs pluging into the tester on the right hand side.
3. Open the cabinet door and pull the first drawer part way out.
4. Release the two retaining screws that hold the tester to the cabinet top. These are easily reached by putting your hand in above the top drawer.
5. Turn these thumb screws 1/4 turn to release the tester.
6. Pick up the electronics tester head from the narrow end, (the side closest to you) and move it towards you to disengage the locking pins on the tube chart housing.
7. Connect a cheater cord between the plug on the side of the tube tester head and the plug under the instruction sign window.

To calibrate the 36-800, plug the calibrator box into Socket No. 122. With the switch on the calibrator box in the cycle 1 position, depress and release the start button on the 36-800 meter panel. While the automatic tube tester is in the first cycle, depress and hold down the short sensitivity button on the calibrator box while adjusting the short sensitivity control on the power supply chassis until the relay just clicks in. While depressing the leakage sensitivity button on the calibrator box only, (still during the first cycle) adjust the leakage sensitivity control on the power supply chassis so that the leakage relay just clicks in. The adjustments of the short sensitivity control and the leakage sensitivity control are independent adjustments. Turn the switch on the calibrator box to the "cycle 2" position. During the second cycle turn the meter adjust control on the power supply chassis so that the meter falls on the right edge of the second "0" in the word GOOD in the green region.

To adjust the timing on the cycles, depress the start button and adjust the timing control for the first cycle so that the first cycle lasts from 28 to 30 seconds. When the tester proceedes into the second cycle, adjust the second cycle timing control for 8 to 10 seconds. These controls are also located on the power supply chassis.

The voltage adjust control, located closest to the transformer on the power supply chassis, is set at the factory for a line voltage of 115 volts. If the line voltage at a given location is characteristically high, then the voltage adjustment control should be set to the 120 volt position. If the line voltage at the particular installation is characteristically low then the voltage adjustment should be set to the 95 volt position.

Warranty

Your GC Model 36-800 Automatic Tube Tester is made of the finest material and carefully tested at the factory before shipment. It carries the standard EIA warranty against defects in material and workmanship for a period of ninety days from the date of purchase. This warranty covers the repair or replacement of defective parts at the descretion of the manufacturer. Damage obviously caused by abuse, neglect, or improper installation is not covered. Warranty registration cards must be returned within ten days after purchase of unit to GC Electronics Company, 400 South Wyman Street, Rockford, Illinois, to validate this warranty.

TROUBLE SHOOTING THE 36-800

Symptom	Look For
Unit seems inoperative.	1. Blown fuse. 2. Relays not closing in Power Supply. 3. Bad tubes in Power Supply. 4. Low B+, and in Power Supply. 5. Faulty mating of cables and socket. 6. Faulty "start" switch.
Step lights on Meter Panel do not light.	1. Bad connection in cable. 2. 117 V. A. C. across lamp terminal during cycle. 3. Bad bulbs. 4. Relay not closing in Power Supply.
Short or Leakage light operates continuously.	1. Short between cathode (red) and filaments or grids; check Socket Panel. 2. Cathode resistor of 5964 low. 3. Short or Leakage control defective. 4. 5964 bad.
Meter does not read.	1. Resistor Board relay not closing. 2. Faulty mating of cables to sockets. 3. 35 V. A. C. between grid and cathode on Socket Panel. 4. Meter adjustment bad. 5. H. V. button faulty.
Tester does not cycle properly.	1. Faulty start switch. 2. Low valued cathode resistors on 6680 tube. 3. Leaky capacitors (C-3 & C-4). 4. Time adjust control open or shorted. 5. Low B + in power supply.
Particular socket faulty.	1. Correct filament voltage under load. 2. Continuity between resistor board and socket panel (wires are color coded).

Symptom	Look For
Tester does not cycle into step 2.	1. Leaky capacitor (C-3). 2. Defective relay contacts. 3. Faulty 6680 tube. 4. Time adjust circuit shorted.
No B + in Power Supply	1. Diodes open. 2. Bad capacitor (C-2). 3. Blown fuse.
Meter pins.	1. Tube in wrong socket. 2. Meter adjusted incorrectly. 3. Line voltage too high. 4. H. V. button faulty. 5. Load resistor open or shorted.
Continuity Sockets, 15, 42, 85, 86, and 96 not working.	1. Bad continuity diode under resistor bd. 2. Continuity of wiring on Socket Panel. 3. H. V. switch defective.

36-800 Parts List

Schematic No.	Description	Value			Part No.	Dlr. Net
R1	Resistor	150 ohm	2W	10%	1002-033	.30
R2	Resistor	100 ohm	2W	10%	1002-034	.30
R3	Resistor	47 ohm	2W	10%	1002-037	.30
R4	Resistor	47 ohm	2W	10%	1002-037	.30
R5	Resistor	47 ohm	2W	10%	1002-037	.30
R6	Resistor	47 ohm	2W	10%	1002-037	.30
R7	Resistor	47 ohm	2W	10%	1002-037	.30
R8	Resistor	47 ohm	2W	10%	1002-037	.30
R9	Resistor	47 ohm	2W	10%	1002-037	.30
R10	Resistor	100 ohm	2W	10%	1002-034	.30
R11	Resistor	180 ohm	2W	10%	1002-035	.30
R12	Resistor	470 ohm	2W	10%	1002-036	.30
R13	Resistor	820 ohm	2W	10%	1002-032	.30
R14	Resistor	4700 ohm	1W	10%	1001-036	.20
R15	Resistor	220 ohm	1/2W	10%	1000-094	.15
R16	Resistor	8.2K	1W	10%	1001-012	.20
R17	Resistor	100K	1/2W	10%	1000-071	.15
R18	Resistor	560K	1/2W	10%	1000-099	.15
R19	Potentiometer	1 Meg linear taper			2300-011	1.10
R20	Resistor	40 ohm	10W	10%	1003-038	.50
R21	Resistor	30 ohm	10W	10%	1003-030	.50
R22	Resistor	23 ohm	10W	10%	1003-029	.50
R23	Resistor	13 ohm	10W	10%	1003-035	.50
R24	Resistor	10 ohm	10W	10%	1003-027	.50
R25	Resistor	30 ohm	10W	10%	1003-030	.50