TECHNICAL MANUAL

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL INCLUDING REPAIR PARTS LIST FOR TESTER, DIELECTRIC MODEL A-100-2G (SKARSHAUG TESTING LABORATORY, INC.) (NSN 4940-00-077-1990)

H E A D Q U A R T E R S , D E P A R T M E N T O F T H E A R M Y

MAY 1981

TECHNICAL MANUAL

No. 9-4940-400-14&P

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, *1 May 1981*

Operator's, Organizational, Direct Support and General Support Maintenance Manual Including Repair Parts List For TESTER, DIELECTRIC MODEL A-100-2G (NSN 4940-00-077-1990)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2, located in the back of this manual direct to: Commander, US Army Armament Materiel Readiness Command, ATTN: DRSAR-MAS, Rock Island, IL 61299. A reply will be furnished direct to you.

NOTE

This manual is published for the purpose of identifying an authorized commercial manual for the use of the personnel to whom this tester is issued.

Manufactured by: Skarshaug Testing Laboratory, Inc.
4803 Lincoln Way West
Ames, IA 50010

Procured under Contract No. DAAA09-76-C-6515

This technical manual is an authentication of the manufacturers' commercial literature and does not conform with the format and content specified in AR 310-3, Military Publications. This technical manual does, however, contain available information that is essential to the operation and maintenance of the equipment.

SAFETY

THE TEST OPERATOR MUST FOLLOW ALL ACCEPTED SAFETY PRACTICES. PROCEED WITH CAUTION, AND DO ALL IN HIS POWER TO ASSURE A SAFE TEST.

BECAUSE OF THE INHERENT DANGERS IN ANY HIGH VOLTAGE WORK, SPECIAL CARE MUST BE TAKEN TO SAFEGUARD PERSONNEL DURING ANY TESTING OR FAULT FINDING.

GENERAL

REGARDLESS OF THE TYPE TEST TO BE MADE OR FAULT TO BE FOUND, CERTAIN PRELIMINARY STEPS SHOULD PRECEDE THE ACTUAL TEST. FIRST, OPEN ALL SWITCHES AND BREAKERS TO DE-ENERGIZE THE CABLE OR EQUIPMENT AND ISOLATE THE ITEM. USING A HOT STICK AND RUBBER GLOVES, GROUND ALL SECTIONS OF THE TEST ITEM TO INSURE THAT IT IS NOT CHARGED.

CAREFUL ADVANCE PLANNING IS ESSENTIAL TO A PROPER AND SAFE TEST. PROPER TEST EQUIPMENT, GROUND LEADS, HIGH VOLTAGE CABLES, HOT STICK, RUBBER GLOVES AND ANY OTHER SPECIAL TOOLS SHOULD BE ASSEMBLED AT THE TEST SITE.

THE EQUIPMENT TO BE TESTED SHOULD BE DE-ENERGIZED,*PROPERLY GROUNDED AND DISCONNECTED. CABLES TO BE TESTED SHOULD BE DE-ENERGIZED, *PROPERLY GROUNDED, AND ISOLATED FROM OTHER COMPONENTS SUCH AS SWITCH GEAR, TRANSFORMERS, LIGHTNING ARRESTORS, ETC. BOTH ENDS OF A CABLE TO BE TESTED SHOULD BE DISCONNECTED AND PROTECTED TO SAFEGUARD PASSING PERSONNEL. THE CONDUCTORS AT THE FAR END OF A CABLE SHOULD BE SEPARATED AND TAPED TO AVOID EXTERNAL FLASH OVER OR LEAKAGE DURING THE TEST.

A MAN SHOULD BE STATIONED AT ANY POINT WHERE THE TEST ITEM IS ACCESSIBLE TO UNAUTHORIZED PEOPLE AND BARRIERS SHOULD BE ERECTED. SIGNS SHOULD BE POSTED THAT READ 'DANGER - HIGH VOLTAGE TEST IN PROGRESS, KEEP AWAY." DO NOT USE TERMS SUCH AS "KILOVOLTS," *KV' OR 'HV' BECAUSE THE AVERAGE PERSON DOES NOT UNDERSTAND THE TRUE MEANING OF THESE TERMS OR ABBREVIATIONS.

DECIDE UPON THE PROPER TEST PROCEDURE TO BE FOLLOWED BEFORE STARTING THE TEST.

HIGH VOLTAGE TESTING

AFTER MAKING ANY TEST TURN THE HIGH VOLTAGE SWITCH OFF AND RETURN THE VOLTAGE CONTROL TO ZERO OR MINIMUM POSITION, CHECK THE KILOVOLTMETER FOR A ZERO INDICATION (ON DC TEST THE CAPACITIVE ELEMENT OF THE TEST ITEM WILL HOLD A CHARGE AND MAY TAKE A LONG TIME TO DISCHARGE) AND *GROUND THE TEST ITEM BEFORE DISCONNECTION. AFTER A DC TEST HAS BEEN PERFORMED THE GROUND SHOULD BE LEFT ON THE ITEM FOR AT LEAST AS LONG AS THE TOTAL TIME HIGH VOLTAGE WAS APPLIED TO PREVENT A VOLTAGE BUILD UP DUE TO ABSORPTION CURRENTS. IT IS BEST TO LEAVE A GROUND ON A TEST ITEM ANY TIME IT IS NOT IN SERVICE OR UNDERGOING A TEST.

*ANY TIME A GROUND IS TO BE PLACED ON A CIRCUIT IT SHOULD FIRST BE GROUNDED WITH A HOT STICK AND RUBBER GLOVES. ALL CIRCUITS NOT IN USE (OR CONNECTED TO A GUARD OR BYPASS CIRCUIT) SHOULD BE GROUNDED.

FAULT FINDING

MAKE AN INSULATION RESISTANCE TEST ON THE FAULTED CABLE BETWEEN THE CONDUCTOR AND GROUND, SHIELD OR HOUSING BEFORE TESTING ON BOTH ENDS OF A CABLE TO DETERMINE THE CONDITION OF THE FAULT. CONSIDER ALL THE FACTORS EFFECTING THE FAULTED CABLE, SUCH AS THE RESISTANCE OF THE FAULT, THE AGE OF THE CABLE, THE CONDITION OF THE GROUND (IF BURIED), THE HUMIDITY, THE VOLTAGE RATING OF THE CABLE, ETC. AND DECIDE ON THE BEST TEST METHOD OR METHODS TO BE USED.

BECAUSE OF THE HEAVY PULSE CURRENT (POSSIBLY THOUSANDS OF AMPERES) GENERATED WITH CAPACITANCE DISCHARGE EQUIPMENT. IT IS ABSOLUTELY ESSENTIAL THAT CAREFUL ATTENTION BE PAID TO PROPER GROUNDING AND SAFETY PRACTICES. THE TEST EQUIPMENT SHOULD BE TIED TO A GOOD EARTH GROUND WITH AS SHORT AND HEAVY A CONNECTION AS POSSIBLE. THE UNUSED PHASES OF A MULTI-PHASE CABLE AND THE SHEATH OR NEUTRAL SHOULD ALSO BE TIED TO THIS SAME GROUND.

EQUIPMENT GROUNDING INSTRUCTIONS

IT IS ABSOLUTELY ESSENTIAL FOR SAFETY OF OPERATING PERSONNEL AS WELL AS FOR PROPER OPERATION OF THE TEST EQUIPMENT, THAT THE EQUIPMENT BE EFFECTIVELY GROUNDED. EFFECTIVELY GROUNDED, AS DEFINED IN THE NATIONAL ELECTRICAL CODE, MEANS ". . . . . CONNECTED TO EARTH THROUGH A GROUND CONNECTION OF SUFFICIENTLY LOW IMPEDANCE AND HAVING SUFFICIENT AMPACITY TO PREVENT THE BUILDING UP OF VOLTAGE WHICH MAY RESULT IN UNDUE HAZARD TO CONNECTED EQUIPMENT OR TO PERSONS."

DEPENDING ON THE POWER INPUT REQUIREMENTS, SOME INSTRUMENTS MAY BE EQUIPPED WITH A POWER INPUT CABLE HAVING A THREE-PRONG GROUNDING TYPE PLUG, A TWO-PRONG PLUG WITH GROUNDING CLIP, OR A THREE CONDUCTOR CABLE TERMINATING IN LUGS (WHERE ONE LUG IS FOR GROUND CONNECTION). IN ANY CASE AN EFFECTIVE GROUND CONNECTION MUST BE PROVIDED.

WHERE A THREE-PRONG GROUNDING TYPE PLUG IS USED, THE EQUIPMENT WILL BE GROUNDED THROUGH THE GROUND PRONG PROVIDED THAT THE RECEPTACLE ITSELF IS EFFECTIVELY GROUNDED THROUGH A LOW IMPEDANCE GROUND CONNECTIOH.

ON INSTRUMENTS EQUIPPED WITH A TWO-PRONG PLUG AND GROUNDING CLIP, A THREE CONDUCTOR LINE CORD TERMINATED IN LUGS, OR WHERE A TWO-PRONG ADAPTER IS USED ON A THREE-PRONG PLUG, THE GROUNDING CLIP OR LEAD MUST BE CONNECTED TO A LOW IMPEDANCE EARTH GROUND. FOR A LOW IMPEDANCE EARTH GROUND, A CONTINUOUS METALLIC UNDERGROUND WATER SYSTEM MAY BE USED FOR GROUND CONNECTION. WHERE THIS IS NOT AVAILABLE A DRIVEN GROUND ROD MAY BE USED TO PROVIDE AN EFFECTIVE EARTH GROUND. IN EITHER CASE THE RESISTANCE TO GROUND OF THE PIPING SYSTEM OR DRIVEN GROUND ROD SHOULD NOT EXCEED 25 OHMS AS REQUIRED BY THE NATIONAL ELECTRICAL CODE.

SOME INSTRUMENTS ARE EQUIPPED WITH A SAFETY GROUND TERMINAL IN ADDITION TO THE GRONDING CONDUCTOR IN THE LINE CORD. THIS TERMINAL SHOULD BE CONNECTED TO AN AUXILIARY GROUNDING ELECTRODE, HAVING LOW IMPEDANCE, SUCH AS A PIPING SYSTEM OR DRIVEN GROUND REFERRED TO ABOVE. THIS TERMINAL SHOULD BE CONNECTED TO GROUND WITH HEAVY WIRE.

IF TEST EQIPMENT IS BEING USED IN THE FIELD WHERE INPUT POWER IS PROVIDED BY A GASOLINE ENGINE DRIVEN ALTERNATOR, GENERATOR, OR A BATTERY OPERATED CONVERTER, IT IS ESSENTIAL THAT NOT ONLY THE TEST EQUIPMENT BUT ALSO THE METALLIC FRAMEWORK OR HOUSING OF THE POWER SOURCE BE GROUNDED.

FAILURE TO COMPLY WITH THE ABOVE EQUIPMENT GROUNDING INSTRUCTIONS COULD RESULT IN DANGEROUS ELECTRICAL SHOCK TO OPERATING PERSONNEL .

Q-1819

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SCHEMATICS INDICATING LOCATION OF.KEY PARTS BY REFERENCE NUMBER

INTRODUCTION

This manual describes the construction, assembly and use of Dielectric Tester Model A-100-2G, with pertinent safety cautions. A suggested procedure for handling gloves before, during, and after test is included.

Before utilizing the tester, all operators should be thoroughly familiar with the contents of this manual, the function of all controls and control systems and assure that the grounding instructions have been complied with before power is connected. FAILURE TO COMPLY WITH GROUNDING INSTRUCTIONS COULD BE HAZARDOUS.

Operators of the tester should be familiar with the care, inspection, testing, storage, and use of flexible electrical insulating protective equipment for electrical workers, such as gloves and sleeves.

Standards against which all tests should be measured are as prescribed by appropriate military headquarters. It is recommended that standards established by American Society for Testing and Materials (ASTM) be utilized, unless otherwise directed by competent military authority.

To insure the continued accuracy of the test voltage, as indicated by the test equipment voltmeter, it is recommended the test equipment be calibrated at least annually, by use of a calibrated sphere gap, or a calibrated electrostatic voltmeter, consistent with ANSI C68.1-1969 and C68.2-1972 or the latest revisions thereof.

Glove Tester Model A-100

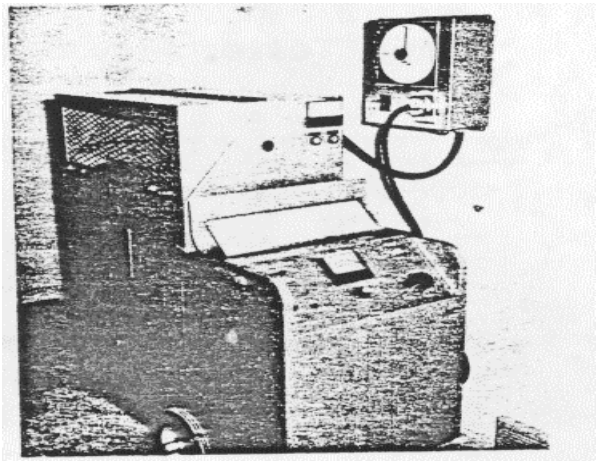


Fig. 1 - Composite Test Unit Model A-100.

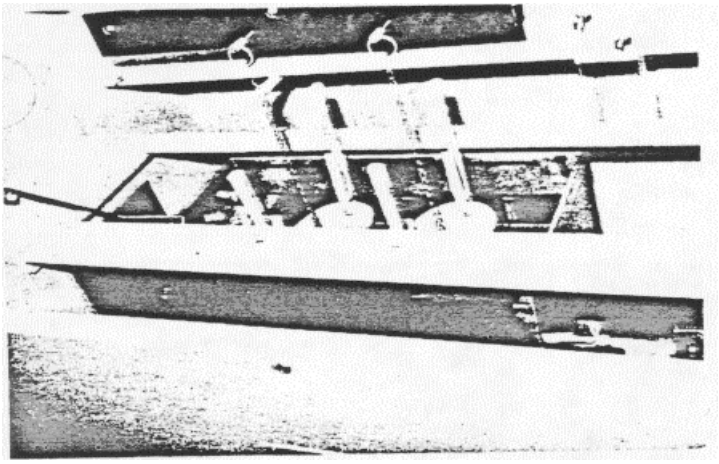


Fig. 2 - Gloves in test position.

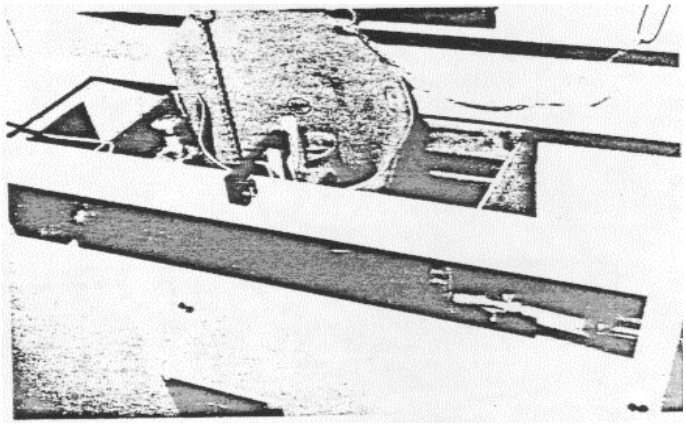


Fig. 3 - Sleeve in test position.

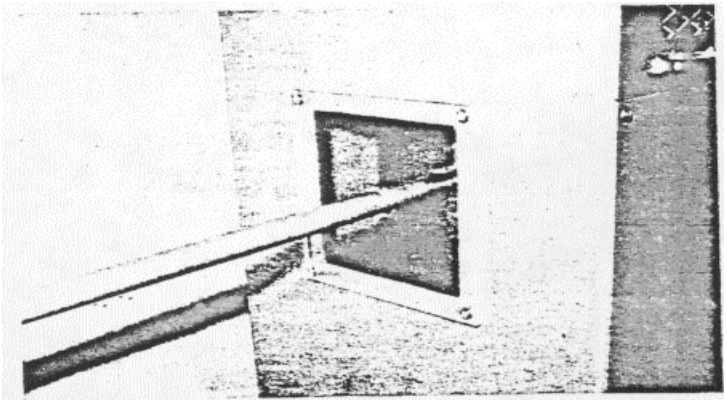


Fig. 4 - High Voltage Probe to Connect Auxiliary Equipment.

Glove Tester Model A-100-2S

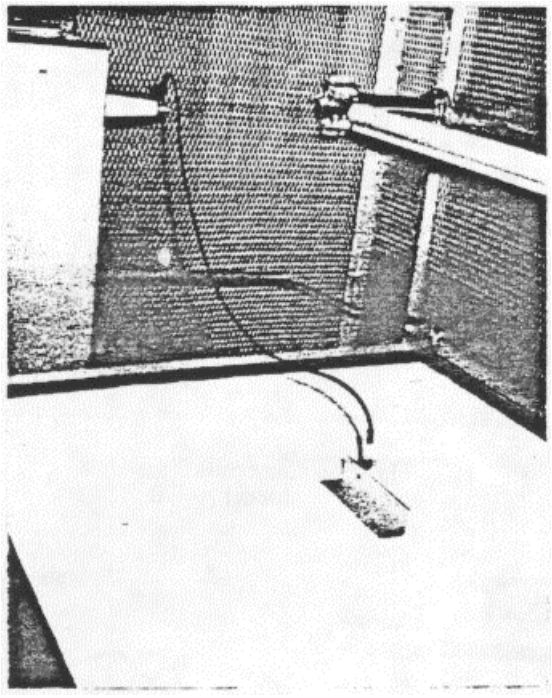


Fig. 5 - Blanket in test position.

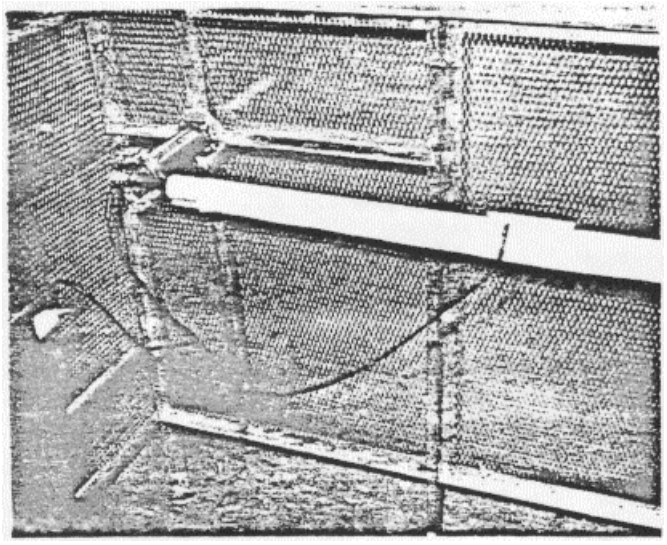


Fig. 6 - Line Hose in test position.

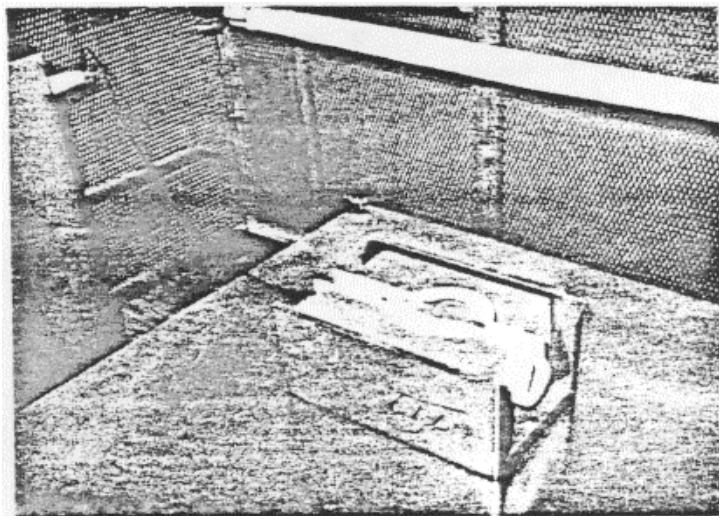


Fig. 7 - Hood in test position.

SLEEVE AND GLOVE TEST POSITIONING

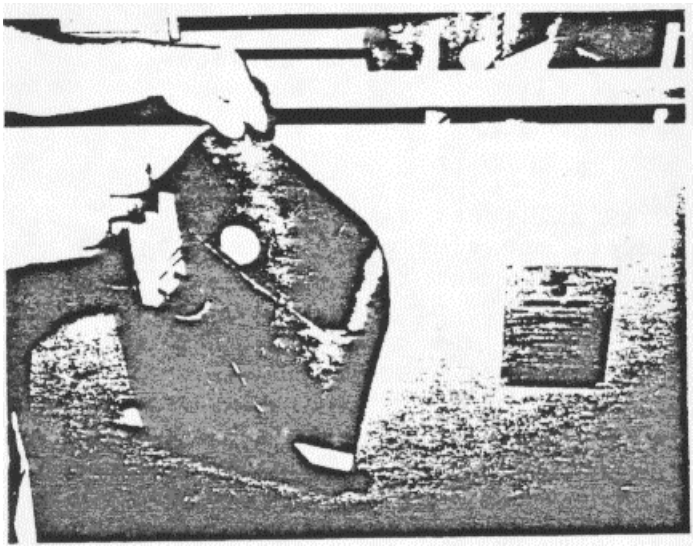


Fig. 8 - Positioning of Insulated Sleeve Pins for testing with Hammock method of Suspension

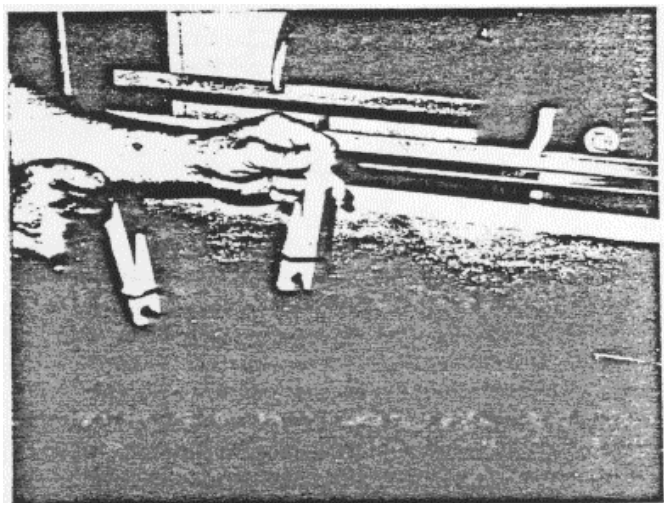


Fig. 9 - Positioning of Insulated glove pins for glove testing.

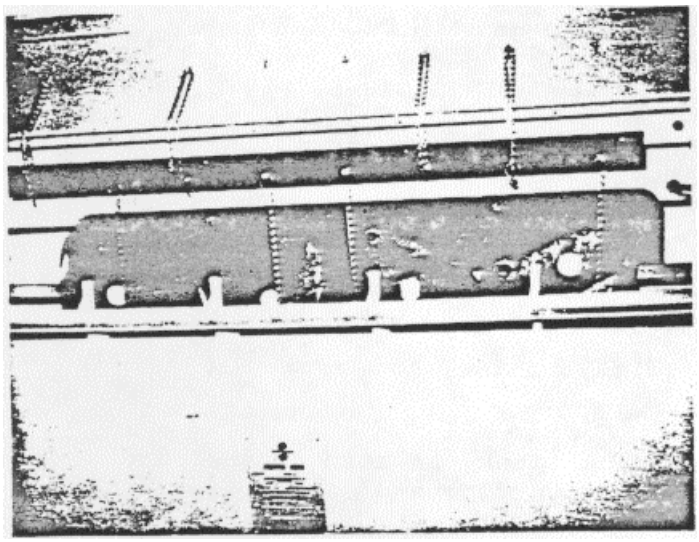


Fig. 10 - Four sleeves in test position on Model A-100-8G test unit.

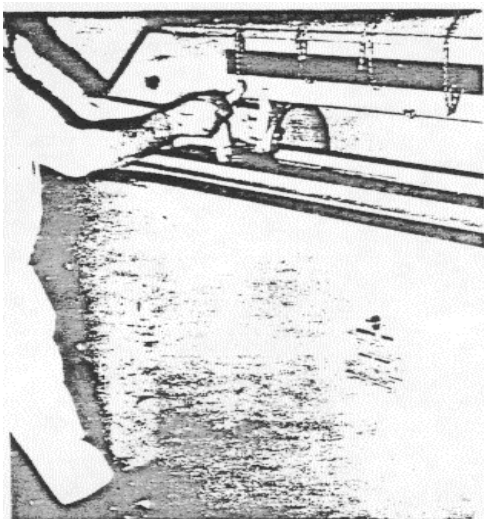


Fig. 11 - Filling glove with water using foot control valve.

PURPOSE AND FUNCTION

This equipment is designed to test the safety of clothing, supplies and minor equipment used by personnel in power line maintenance. Electrical tests place the items under appropriate high voltage charges for fault finding and measure the leakage of current through the item under test.

CAPABILITIES

Model A-100-2G DIELECTRIC TESTER will test simultaneously two (2) each or one (1) pair of gloves, one sleeve, hard hat or jumper cable when placed in the stationary test rack of the main cabinet. When connected to auxiliary shelter or cage appropriately grounded, the basic unit may be used to test blankets, line hose, hoods, dead-end protectors, matting, or other protective devices.

PERFORMANCE CHARACTERISTICS

When utilized with the following American Society for Testing and Material standards and specifications, the unit will provide voltage and dielectric tests on:

Rubber insulating gloves, Class 0, 1, 2 and 3 up to 18 inches in length - see ASTM D120-70.

Rubber insulating sleeves - see ASTM D1051-70.

Rubber insulating matting for use around electric apparatus - see D178-24 (1970).

Rubber insulating blankets - see ASTM D1048-70.

Rubber insulating hoods - see ASTM D1049-59 (1970).

Rubber insulating line hose - see ASTM D1050-59 (1970).

NOTE: Model A-100-2G will test other items up to 30 Kv-AC.

POWER AND UTILITY REQUIREMENTS

Electrical current - 220 Volt, 1 phase, 60 Hertz AC.

Water - Source to fill test rack (tank) in main cabinet and a drain for disposal of overflow and dirty water.

ENVIRONMENTAL CONSIDERATIONS

Tester should be installed to allow venting off of ozone which results from test operations. For best results, test operations of rubber products should not be done in extreme heat or cold temperatures.

Items furnished with basic test unit:

1. Test rack (tank) in cabinet.
2. Transformer and controls in cabinet.
3. Electrical power control panel & timer - wall mount.
4. Two (2) sets clips for suspending gloves in test rack.
5. Two (2) clips for suspending sleeves in test rack.
6. One (1) sleeve bar for sleeve testing.
7. One (1) sleeve rack.
8. Electrical parts connecting auxiliary shelter or cage:
   a. One (1) High voltage probe.
   b. Four (4) insulators for blanket testing table.
   c. Two (2) insulators for line hose testing electrode with pipe adapters.
   d. One (1) insulated ground jack.

Additional items required:

Conduit and cable to connect power source to test unit.

Water lines - input clean water and drain for waste disposal.

Air vent pipe or hose for output of ozone from test area.

If basic unit is used to test items in other than the test rack:
Separate electrical shelter or cage, shielded and grounded.

Safe electrical connections from shelter to test unit, wired with door interlocking system and grounding.

Table for blanket, hood or other item under test.

Mandrel electrode for line hose testing.

NOTE: Such shelter or cage may be fabricated commercially or similar to Army NSN 5410-00-999-6022 and Army Technical Bulletin TB 9-4940-327-30.

CAUTION: Take special safety precautions when testing auxiliary items in separate shelter or cage. Enclose the outside test area and electrically connect the entrance gate into the interlock safety system or the stationary tester. Restrict personnel from entry to this outside area while tests are in process.

Physical measurements:

Inch measurements of cabinets and doors are shown in Drawing No. 1, Front view and Drawing No. 2 End or side view:

	Net Weight		Gross Weight		Cubage	
Test Transformer -	355	lbs.	445	lbs.	27	Cu ft.
Glove Test Rack --	357	lbs.	472	lbs.	39	Cu ft.
Control Panel ----	20.5	lbs.	22.5	lbs.	1.25	Cu ft.
TOTAL --	732.5	lbs.	939.5	lbs.	67.25	Cu Ft.

INSTALLATION AND ASSEMBLY GUIDE

WARNING

THE VOLTAGES EMPLOYED IN THIS SET ARE DANGEROUS TO LIFE. BE CAREFUL !

Safety devices have been incorporated in the design to protect the operator against dangerous voltages within the set. However, high voltages are a constant source of danger unless properly protected against accidental contact.

1. Remove any blocking which may have been added for shipping purposes.

2. Check shipment for loose or broken parts.

3. Connect the water drain of the glove rack to a floor drain. The glove rack should be placed in a level position by turning adjustable screw legs.

4. Connect the water valve to a suitable water supply. DO NOT insulate the water supply.

5. With breaker switch in timer (clock) control panel in OFF position, connect panel to power source 220 volt, 1 phase 60 cycle AC. Do not connect power to transformer until cabinet wiring is completed.

6. Check to see that there is a good milliampere fuse in the milliammeter circuit on the control panel.

7. Insert a thin sheet of tissue paper (equivalent to cigarette paper) between plate and spring electrode on the film cut-out.

8. Place the two cabinets end to end, with test cabinet on left of transformer cabinet. Adjust leveling screws on both cabinets to match holes through which connecting wires are to be fed.

9. Remove from tank in test cabinet all spare parts.

10. On right end of test cabinet, place in position three (3) nipple assemblies with lock nuts through which wires are fed to transformer cabinet. Lock nuts should be left loose until cabinets are bolted together. (See step 14).

11. Feed three pairs of wires from test cabinet through matching holes in transformer cabinet in the sequence indicated in Drawing No. 4, wiring diagram.

12. Bolt test and transformer cabinets together (4 bolts), with nipple assemblies from test cabinet in corresponding holes in transformer cabinet.

13. Apply three (3) lock nuts inside transformer cabinet on the end of the nipple previously positioned in test cabinet.

14. Tighten four (4) bolts holding cabinets together and three (3) lock nuts to secure the nipple assemblies between the cabinets, through which wires are fed. (Step 11 above). Bolt cover stops (Ref. 23) to top of cabinet.

15. Complete wiring within transformer cabinet as follows, in accordance with wiring diagram Drawing No. 4.

A. Connect three (3) wire pairs from test cabinet to terminal block in transformer cabinet:

Yellow #1 & #2 for glove test electrodes to block numbers E1 and E2 respectively.
Blue #2 and #3 for door safety switch to block numbers 2 and 3 respectively.
Black (C) and White (N) for line voltage to fan block numbers C and N respectively.

Ref. No.	Item
1	Cabinet Assembly Test Rack
23	Plexiglass and Rubber Bumper
34	Nipple Assembly
45	Bolts (Thru Cabinet Holes)
49	High Voltage Cable

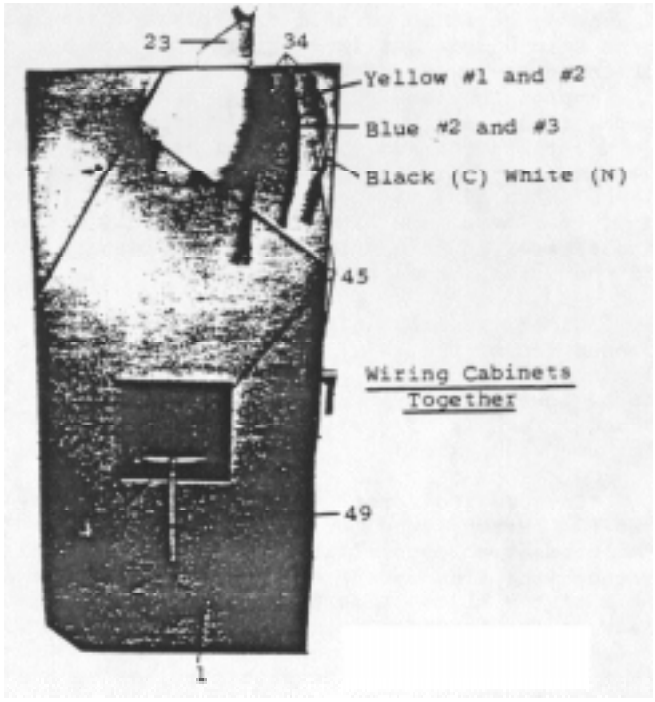


Figure 12

B. Feed high voltage cable from side of tank in test cabinet through hole in plexiglass of transformer cabinet and connect electrically under corona ball on top of transformer core.

16. Ground transformer to good earth ground. Ground connection is installed on right end of transformer cabinet.

17. Caution - Confirm that all wiring in cabinets and other assembly steps are completed. DO NOT connect input power cable until assembly is checked and earth ground is accomplished.

18. Electrical connections should be made with care and only by a qualified individual. Connect transformer cabinet as indicated in Drawing No. 4 wiring diagram to timer and power control panel for power source.

GENERAL DESCRIPTION OF DIELECTRIC TESTER

Model A-100-2G Dielectric Tester cabinets and control panel are assembled as shown in Figure 1, and in Drawing No. 1. Test rack details are shown in Drawing No. 1.

Mounted within the test cabinet is a stainless steel tank, connected to fresh water controlled by a foot operated valve (Figure 11). Above the water tank are two fiberglass rails, front and back (Figures 2 and 3), designed to hold fiberglass spring clips fastened to suspend item under test in water in the tank. A drain is available for draining the water supply and for maintaining the water level below the top of the tank. This test rack (tank) is supported above a metal frame base by one large 10 inch high porcelain insulator (85 Kv dry flashover and 40 Kv wet flashover). An interlocked door permits easy access for top loading of items to be tested in the tank. When door is open, the circuit is grounded for safety; when door is closed, the high voltage circuit may be energized. For testing sleeves in this unit, special clips are available for attachment to the frame above the tank.

Other electrical features of this stationary test rack include connection of the water tank to source of high voltage, providing a stationary electrode. Above the tank are two (2) chain electrodes to be lowered into the items under test in the tank. See figures 2 and 9 for use of electrodes with gloves and figures 3, 8, and 10, for use with sleeves.

On the transformer cabinet at approximately chest height are two (2) buttons, one for each chain electrode (or glove), allowing measurement through milliammeter of the amount of current leaking through the item under test. Power and voltage control switches as well as the kilovolt meter for proof testing are also located on the face of the transformer cabinet, (see Figure 1).

A separate power source control panel and timer is utilized to control input of electricity into the transformer.

At the far end of the stationary test rack, away from the transformer, is a jack for connecting the ground return and an insulated opening for a test probe when required for testing items in a separate shelter or cage outside the stationary test rack. See figure 4 for probe in use. For safety, this cabinet opening should be closed when probe is not in use. See Figures 5, 6 and 7 for item testing in separate shelter or cage.

Transformer - Model A-100-2G Dielectric Tester includes a transformer output 0-30,000 volts AC, capacity 5 KVA intermittent and 2 KVA continuous duty, input 220 volt, 1 phase, 60 Hertz AC.

SPECIFICATIONS

MODEL AND TYPE:	4707 AC HYPOT and remote control section with interconnecting control cable.
INPUT VOLTAGE AND FREQUENCY:	220/240 volts, 50/60 Hz, single phase.
INPUT TERMINATION:	Three conductor, permanently attached POWER CABLE, terminated in junction box mounted inside transformer cabinet with a ½" conduit connector through the side wall providing customer connection.
OUTPUT VOLTAGE:	Continuously adjustable in single OUT-PUT range 0-30 kilovolts. Monitored by a single range KILOVOLTMETER scaled 0-30 kilovolts.
OUTPUT CURRENT:	167 MILLIAMPERES MAXIMUM. Limited by an OVERLOAD DETECTOR with dual range of 50 and 167 MILLIAMPERES for preset-ting maximum acceptable leakage current.
CAPACITY:	5 KVA; 5 min. ON and 15 min. OFF.
OUTPUT TERMINATION:	HIGH VOLTAGE output corona ball on transformer, and GROUND return terminal.
CABINETRY:	Skid-mounted grey steel high voltage power supply and rack and panel control section.
HIGH VOLTAGE POWER SUPPLY DIMENSIONS:	21" high x 16-3/4" wide x 18" deep.
CONTROL SECTION DIMENSIONS:	10½" high x 19" wide x 10" deep.

GENERAL FEATURES

(PRIMARY OPERATING CONTROLS AND INDICATORS)

POWER SWITCH

The POWER SWITCH makes or breaks input power to the instrument. It may control a remotely located contactor or power relay, or it may switch the input line directly - depending on the input current requirements. On some instruments this switch is also the input circuit breaker.

HIGH VOLTAGE ADJUST CONTROL

A continuously variable HIGH VOLTAGE ADJUST CONTROL gives the operator smooth control for increasing or decreasing the output voltage between minimum and maximum. This control is equipped with a zero return interlock switch, making it necessary for the control to be at its minimum output volts position before the high voltage control circuit can be energized. This prevents the sudden application of high voltage to the item under test.

HIGH VOLTAGE SWITCH

This three position lever switch, operating in the low voltage input line, controls the energizing or de-energizing of the high voltage control circuit. With this switch in its center OFF position, the high voltage control circuit is de-energized, and no high voltage is available at the output termination regardless of the position of the voltage control. In the CONTINUOUS position with the voltage control at minimum output volts position, the high voltage control circuit will be energized, and the lever switch will remain in this position until returned to center OFF by the operator. In the MOMENTARY position with the voltage control at minimum output volts position, the high voltage control circuit will be energized only as long as the operator holds the lever switch in this position.

HIGH VOLTAGE LOCKOUT

The HIGH VOLTAGE LOCKOUT switch disables the high voltage output system for safety of operating personnel when high voltage connections are being made, or to prevent unauthorized use of the equipment.

By turning the key to the left, the high voltage control circuit will be rendered inoperative. The key may be removed when the LOCKOUT switch is in this position.

GENERAL FEATURES

(PRIMARY OPERATING CONTROLS AND INDICATORS) (cont'd.)

KILOVOLTMETER

The KILOVOLTMETER meters the high voltage output for the instrument. It is connected directly across the output termination, thus indicating true terminal voltage irrespective of regulation.

OUTPUT CURRENT SWITCH

This switch provides for selecting overload breaker sensitivities. Some instruments may be equipped with dual ranges, others with three ranges. Positions for a dual range are identified HIGH and LOW, while three ranges are identified HIGH - MED.- LOW. The overload breaker sensitivity for these ranges will be specified in the SPECIFICATION section for a particular instrument.

POWER AND HIGH VOLTAGE INDICATORS

The POWER light indicates the availability of primary power, while the HIGH VOLTAGE pilot light indicates availability of high voltage at the output termination. The POWER indicator will be ON any time line power is available to the instrument and the POWER switch is ON, providing all primary input circuit breakers are closed. The HIGH VOLTAGE indicator will be ON only while the high voltage control circuit is energized.

GENERAL FEATURES

(CONTROL SYSTEMS AND TERMINATION)

OUTPUT TERMINATION

The high voltage is terminated by a 1" diameter corona ball. This ball is mounted to a 1/4 - 20 stud on the uppermost point of the transformer. The GROUND is secured to the transformer chassis and interconnected to the control chassis.

PRIMARY CIRCUIT BREAKERS OR FUSES

The primary circuits of this instrument are protected by circuit breakers or fuses of the proper type and rating.

A removable panel, identified by an escutcheon, will provide access to fuses when required.

Should any of these circuit breakers or fuses open, the cause should be investigated. The breakers may be reset by pressing in firmly on their reset button. Replace fuses with new fuses of identical rating.

SAFETY INTERLOCK RECEPTACLE (Completed by Manufacturer)

The SAFETY INTERLOCK RECEPTACLE, located on the rear skirt of the cabinet, provides for interlocking the high voltage control circuit from a remotely located switch. This receptacle is electrically connected in series with the high voltage lever switch, and has a jumper wire across the terminals of the mating plug as the instrument is shipped from the factory. To use the SAFETY INTERLOCK, remove the twist-lock plug from its receptacle and remove the jumper wire from its terminals. Connect the wires of the remotely located switch to the terminals of this plug and re-insert the plug into its twist-lock receptacle. While the remotely located switch is open, the high voltage control circuit will be disabled and no high voltage will be available at the output termination, regardless of the setting of any other controls on the instrument.

GENERAL FEATURES

(CONTROL SYSTEM AND TERMINATION) (cont'd.)

SAFETY GROUND TERMINAL (See page 11, steps 16 & 17)

The ground terminal located on the rear skirt of the cabinet, identified SAFETY GROUND, is to be used for grounding the equipment to earth ground. This connection must be made in addition to that made by the INPUT cable ground conductor. Use a conductor of sufficient ampacity, preferably a number 12 or larger, with a heavy duty lug for connection to the SAFETY GROUND TERMINAL. Use a compression clamp to connect this ground conductor to a low impedance driven ground or a continuous water piping system. This ground conductor should be as short as possible, preferably less than ten feet long.

WARNING: FAILURE TO PROPERLY GROUND THE EQUIPMENT COULD RESULT IN A DANGEROUS SHOCK HAZARD.

INPUT POWER CABLE

The INPUT POWER CABLE is a three conductor type, properly terminated, depending on the input current and voltage.

NOTE: BE SURE THE INSTRUMENT IS CONNECTED TO A GOOD EARTH GROUND REGARDLESS OF TYPE OF INPUT CABLE TERMINATION.

STORAGE AND RELOCATION DATA

The dielectric tester should be connected or disconnected from utility power source only by individuals qualified and knowledgeable in handling electricity and high voltage. No special handling or storage is required other than reasonable protection of the test unit from damage or exposure to weather conditions. For shipment, sensitive or fragile parts should be enclosed by crate or box overpacking the permanent cabinets in which the unit is mounted. If test rack and transformer cabinets are separated for convenience of handling, reassemble following assembly instructions, pages 8 & 9.

Special tools and test equipment are not required.

Special connections are required when the test unit is used for testing items in separate electrical shelter or cage such as NSN 5410-00-999-6022.

REPAIR

If procedures outlined in the troubleshooting section do not eliminate the problem, check with the next higher echelon for instructions.

MAINTENANCE

Be sure all power to the unit is turned OFF or disconnected.

After each test load wipe glove supports. (Ref. 10, Fig. 14)

After each testing period, wipe up any water that may have accumulated

in the bottom of the test cabinet. (Ref. 6, Fig. 19)

Once every week, (or more often depending on water condition), drain and clean test tank. (Ref. 2, Fig. 14)

Clean unit, both inside and outside with a damp cloth, to eliminate

excess dust (include Plexiglas between the two cabinets).

Large insulator under test tank should be periodically cleaned.

(Ref. 14, Fig. 19)

In keeping with usage, chain electrodes should be periodically cleaned.

(Ref. 18, Fig. 14)

Rings holding chain electrodes should be periodically replaced, if oxidized. (Ref. 19, Fig. 14)

Check exhaust port on test cabinet, periodically for obstructions.

(Ref. 24, Fig. 14) ’

Periodic checks should be made to see that electrical connections are tight.

Periodic check should be made to assure that unit is well grounded.

TROUBLESHOOTING

Be sure all power to the unit is turned OFF or DISCONNECTED.

MALFUNCTION	PROBABLE CAUSE	REMEDY
No power to unit	Breaker (s) OFF. (Ref. CB-1, Fig. 18 or Ref. 81. Fig.. 20).	Turn breaker(s) ON.
	Loose connections of 220 V input to unit. (Power Source)	Check connections of input cable into transformer cabinet.
	Circuit breaker, CB-1 tripped.	Reset CB-1 on back of ctrl. panel of transf. cabinet.
No High Voltage Light	Lockout switch, S-3, not in proper position.	Turn lockout switch, S-3, clockwise.
	Voltage adjust dial not fully counter-clockwise. T-1	Turn voltage adjust dial fully counter-clockwise.
	One of the door interlock switches not completely engaged. (Ref. 77, Fig. 14)	Close door handles completely.
	External interlock switch (provided by customer) not completely engaged.	Close interlock switch.
	Bad fuse.(Ref. 82, Fig. 21).	Replace Fuse.
High Voltage trips off with practically zero high voltage	Chain electrode, 100-18 in water of test tank. (Ref. 18, Fig. 14).	Hang chain electrode up on safety hook, or place in glove.
	Malfunctioning or broken ground-assembly. (Ref. 9, Fig. 14).	Repair or replace ground-assembly in test cabinet.
	Faulty equipment (sleeve, glove, etc.) being tested.	Remove faulty equipment.
No current meter reading.	Bad fuse (s) (Ref. 73 and Ref. 75, Fig. 18)	Replace Fuse (s)
	Chain electrode not in glove (Ref. 18, Fig. 14).	Place chain electrode in glove.
	Loose or bad high voltage connection. (Ref. 49, Fig. 18 and Fig. 19)	Check connection of high-voltage lead to test tank.

NOTE: If above troubleshooting procedures do not provide a solution, refer the equipment to a higher echelon for repair.

SAMPLE FORMAT OF INSTRUCTIONS TO MILITARY USER

INSTRUCTIONS FOR REQUISITIONING PARTS NOT IDENTIFIED BY NSN

When Requisitioning parts not identified by National Stock Number, it is mandatory that the following information be furnished the supply officer:

1. Manufacturer's Federal Supply Code number 27879.

2. Manufacturer's part number exactly as listed herein.

3. Nomenclature exactly as listed herein, including dimensions if necessary.

4. Manufacturer's model number A-100-2G.

5. Manufacturer's serial number (end item).

6. Any other information such as type, frame number, and electrical characteristics, if applicable.

7. If DD Form 1348 is used, fill in all blocks except 4, 5, 6 and Remarks field in accordance with AR 725-50. Complete form as follows:

    a. In blocks 4, 5 and 6, list manufacturer's Federal Supply Code number 27879 followed by colon and manufacturer's part number for the repair part.

    b. Complete Remarks field as follows:

        Noun: (nomenclature of repair part).
        For: (NSN of end item). 4940-00-077-1990.
        Mfr: (of end item). Skarshaug Testing Laboratory, Inc.
        Model: (of end item). A-100-2G
        Serial: (of end item).

    (Any other pertinent information such as frame number, type, dimensions, etc.)

GLOVE TESTING PROCEDURES GUIDE

1. Record identity of gloves upon receipt:

   A. Record size, class, and owner number or identity.
   B. Determine specific test (s) required as indicated in ASTM D120-70, Table 1 (or other appropriate ASTM for items other than gloves).

2. Visually inspect:

   A. Inflate with air and examine for physical defects.
   B. Clearly mark an unsafe defect, stamp "REJECT"' and deface by cutting off the roll of the cuff to prevent use.

3. Clean gloves:

   A. Hand scrub each with solution to remove spots or foreign material such as tar, paint, oil, and previous test marking.
   B. Machine wash for 15 minutes in mild detergent.
   C. Rinse thoroughly, remove all film.
   D. Dry on open air rack or place in clothes dryer at moderate heat for approximately 10 minutes. Remove from machine as soon as cycle finishes; DO NOT leave in hot dryer.

4. Load test tank, prepare for electrical tests:

   A. Segregate and pair gloves by class and size.
   B. Group those requiring identical test and register in test
   C. Verify that POWER is OFF and that all controls on transformer are at OFF.
   D. Fill or adjust water level in tank to approximately 3" below the top with foot valve.
   E. CAUTION-Before loading tester with gloves (or sleeves) make sure top rails (Reference 100-10) both back and front are clean and dry.
   F. Clamp fiberglass spring clips to the cuff of a glove with hanger on clip facing outside of glove.
   G. Using clips as handles and water foot valve for control, fill a glove from the spout above tank to proper level. (see 4 H below).
   H. In same order as recorded, lower the glove into water tank directly below a chain electrode, suspended by clip hanger over front and back rail at top of tank. Repeat steps 4F through 4H for each additional glove to be tested simultaneously.
   I. Adjust water inside gloves and in tank to appropriate identical levels as indicated in ASTM D120-70 Table 4.
   J. Keep exposed top part of glove dry.
   K. Place one chain electrode inside each glove, assuring that electrode does NOT touch glove.
   L. Close test rack door and begin electrical tests.

5. Electrical proof tests:

NOTE: Operator must be familiar with and follow ASTM D120-70.

A. Determine voltage for fault finding test, time clock setting and acceptable milliamps for current flow test of class and size gloves being tested.
B. Activate high voltage, following operating instructions for control of the transformer.
C. Set machine and apply desired voltage test.
D. If one glove fails under high voltage, it must be removed, defaced and recorded at once as rejected. The electrical voltage test must be started again for remaining gloves in tank.
E. During uninterrupted 3 minute voltage test, push electrode buttons 1 and 2 near milliammeter, to read current leakage on each respective glove. Compare readings with TABLE OF MAXIMUM ALLOWABLE 60 Hz. CURRENT as indicated in ASTM D120-70 Table 1.
F. Record either "REJECT" or the milliammeter reading for each glove registered in step 4B above. Rejects should be defaced.
G. Return all power and high voltage controls and switches to OFF.

6. Prepare gloves for reuse:

A. Verify that power and transformer control switches are OFF.
B. Open loading door to tank, empty gloves of water and remove gloves carefully.
C. Dry on open air rack or place in clothes dryer at moderate heat for approximately 10 minutes. Remove from machine as soon as cycle finishes, DO NOT LEAVE IN HOT DRYER.
D. Separate and mark previously rejected gloves.
E. Clearly label, stamp or mark gloves with the test voltage and date of acceptable proof test, and match pairs.
F. Powder lightly, inside and out, to prevent sticking, binding or chaffing.

G. Separately package or box and label or identify:

1. Rejected gloves.
2. Unpaired acceptable gloves.
3. Matched pairs of acceptable gloves, showing size and class.

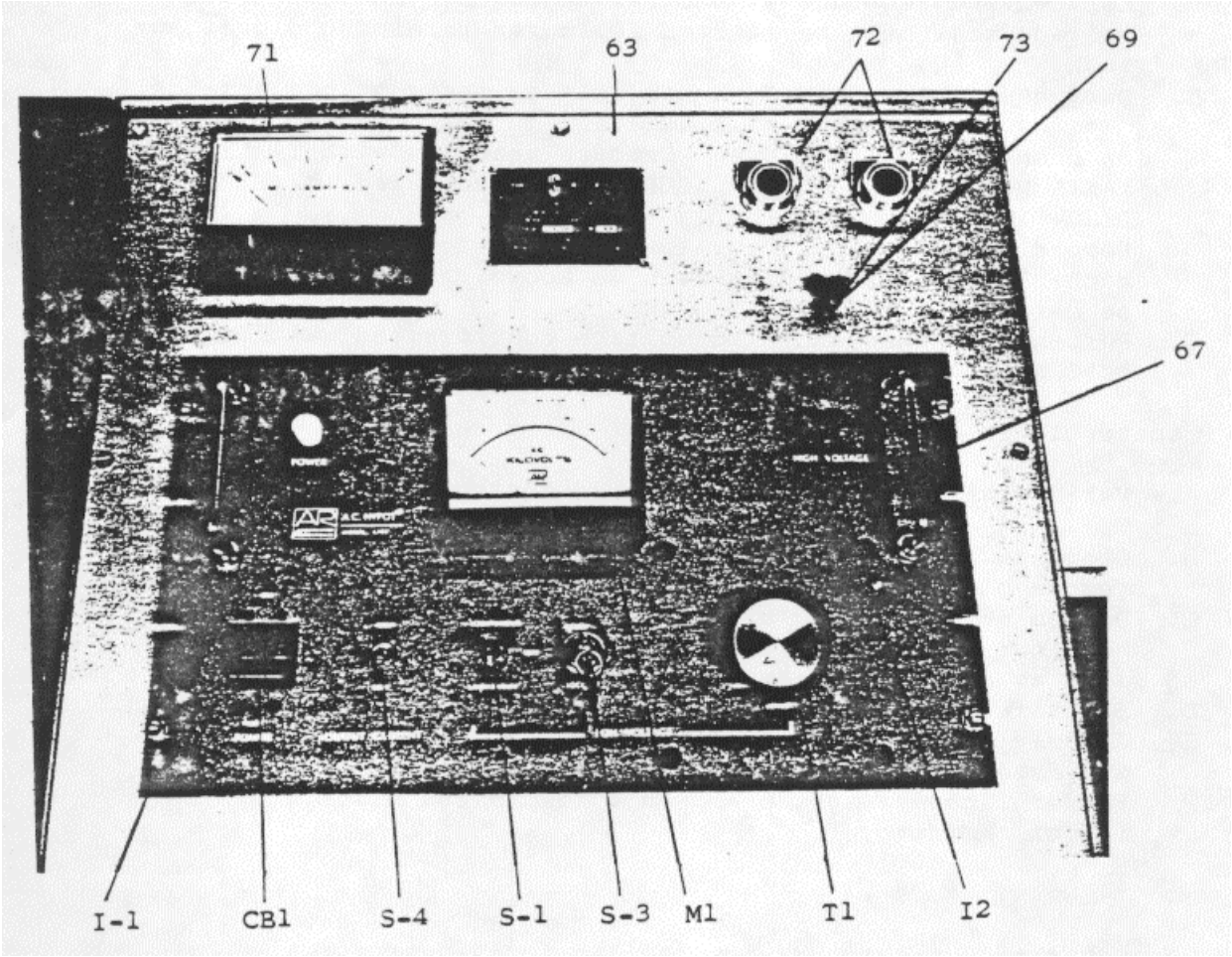
H. Store in area free of extreme heat, direct sunlight or OZONE.

(See National Safety Council Data Sheet 598, for labels and storage guidance).

OPERATING INSTRUCTIONS FOR ELECTRICAL TESTING

FACE OF CONTROL PANEL

Refer. No.	Item
63	Cabinet Assembly Transformer
67	Control Panel
69	Fuse Holder
71	Ammeter
72	Push Button
73	Meter Fuse



CB-1	Circuit Breaker. Power
I-1	Indicator (White)
I-2	Indicator (Red)
M-1	Kilovoltmeter
S-1	Switch Lever - 3 Position
S-3	Switch Key - (Lockout)
S-4	Switch Toggle SPDT (output current)
T-1	Transformer, Var. (Voltage-Control)

Figure 13.

GLOVES IN TEST RACK

Hiqh Voltage Test - Testing for glove failure or rupture.

1. Place gloves (1 or 2) in test rack, lower chain electrode into each. Chain electrodes not used in test must be suspended on safety hooks.

2. Close test rack door and start electrical tests.

3. Rotate the HIGH VOLTAGE CONTROL KNOB full counter-clockwise to ZERO volt position.

4. Place the HIGH VOLTAGE LEVER SWITCH to OFF position.

5. Lift the POWER SWITCH to the ON (up) position.

6. Place OUTPUT CURRENT CONTROL SWITCH at HIGH (up) position for testing gloves or other items in test tank. Place at LOW (down) position for testing items in auxiliary cage.

7. Turn clockwise the HIGH VOLTAGE SAFETY LOCKOUT SWITCH. Then activate the HIGH VOLTAGE LEVER SWITCH from OFF to CONTINUOUS position.

8. Slowly rotate the HIGH VOLTAGE CONTROL KNOB clockwise to the voltage required for test being made. Refer to ASTM D120-70 or latest revision or other standards authorized for the test. Voltage applied is read on the kilovoltmeter.(Refer to Calibration Certificate)

9. If a glove fails or ruptures, the output overload breaker will automatically de-energize the output high voltage. Turn all controls to OFF or ZERO position.

10. Remove the faulty glove (s) and deface. Suspend the unused electrode from this glove position on the safety hook. Wipe dry and clean the fiberglass angle mounting assembly above the tank.

11. To complete the test on remaining glove not failing, repeat steps 2 through 8 above to re-energize high voltage. Apply high voltage for three (3) continuous minutes.

Proof-test current or milliamperes-test current leakage.

12. During the three (3) minute test period, for each respective glove position in use, PUSH (depress) button 1 or 2. Read and record the amount shown on milliammeter for each glove. Compare readings with allowable currents indicated in standards, ASTM D120-70 or other as authorized.

13. At completion of tests, rotate HIGH VOLTAGE CONTROL KNOB slowly counter clockwise to ZERO volts (off) position before removing gloves from test rack. Return all controls to OFF.

OTHER THAN GLOVES IN TEST RACK

Sleeve testing - use above glove procedures except:

1. Install sleeve holder plate on back of fiber-glass angle mounting assembly.

2. Use sleeve instead of glove pins for suspending front of sleeve.

3. Place sleeve in tank, hammock fashion, with sleeve bar in center fold to help stabilize. Suspend shoulder of sleeve from back plate and front of sleeve on sleeve pin. See Figure 3 (sleeve in test position), Figure 8 (sleeve in hammock with bar).

4. Utilize standards as authorized for sleeves, ASTM D1050-70 or latest revision or other if specified by higher authority.

OTHER ITEMS OUTSIDE TEST RACK IN AUXILIARY CAGE

For testing other items in auxiliary test cage, utilize same basic control procedures except:

1. Place output current lever switch in LOW (down) position, see step 6 of glove testing procedure.

2. Utilize standards as authorized by higher authority or the appropriate ASTM standard for the specific item under test.

PARTS LIST - TEST RACK CABINET

Part No.	Ref. No.	Quantity	Description
100-1	1	1	Cabinet Assembly, Test Rack
100-2	2	1	Tank Assembly, Test Rack
100-3	3	1	Drain Pan Assembly
100-4	4	1	Water Line Assembly
100-5	5	1	Electrical Conduit (Flexible)
100-6	6	1	Station Post, Base
100-7	7	1	Foot Pedal Assembly & Spring
100-8	8	1	Exhaust Fan
100-10	10	1	Fiber Glass Angle Mounting Assembly
100-9	9	1	Ground Rod Assembly
100-11	11	8	Adjustable Leveling Screw
100-12	12	2	Electrical Receptacle
100-13	13	1	Tank Base
100-14	14	1	Station Post Insulator
100-15	15	1	Input Valve (3/8")
100-16	16	1	Plexiglas For Probe
100-17	17	1	Drain Valve (1/2")
100-18	18	2	Ground Test Electrode Chain S.S.
100-19	19	2	1" Slip Ring for Chain Electrode
100-20	20	1	Black Plexiglas
100-21	21	1	Fiber Glass Angle
100-22	22	2	Cabinet Lid Handle
100-23	23	2	Plexiglas & Rubber Bumpers
100-24	24	1	Exhaust Grill Assembly
100-25	25	1	Drain Piping-plastic
100-26	26	1	Drain Control Lever
100-27	27	1	Ground rod trip angle
100-28	28	1	Interlock-Switch Trip Angle
100-29	29	1	1/2" Street Ell
100-30	30	1	Cover Assembly
100-31	31	1	Plexiglas, Door (Lid)
100-32	32	2	Ground Electrode Terminal
100-33S	33S	2	Door Handles - Short (Front)
100-33L	33L	2	Door Handles - Long (Back)
100-34	34	3	Nipple Assembly
100-35	35	1	3/8" Nipple
100-36	36	1	Metal Plate, Reinforcing
100-37	37	2	Safety Hooks for chain electrode
100-38	38	4	Glove Holding Pin
100-39	39	10	Rubber Ring
100-40	40	6	Pivot Pin
100-41	41	1	Sleeve Holding Pin
l00-42	42	1	Sleeve Rack
100-43	43	1	Sleeve Bar
100-44	44	2	Sleeve Rack Hooks
100-45	45	4	Bolts W/Nuts and washers, 3/8 x 1
100-46	46	1	High Voltage Probe
100-47	47	6	Insulator
100-48	48	2	Pipe Adapter/Line Hose Electrode
100-49	49	1	High Voltage Cable
100-50	50	1	Insulated Ground Jack

PARTS LIST-TRANSFORMER, CABINET, TIMER, AND POWER CONTROL

Part No.	Ref. No.	Quantity	Description
100-60	60	1	Electrical Junction Box (Power)
100-61	61	1	Electrical Connector
100-63	63	1	Cabinet Assembly, Transformer
100-64	64	1	Plexiglas, High Voltage Cable
100-65	65	1	Transformer Base Frame Assembly
100-66	66	1	Metal Plate
100-67	67	1	Control Panel
100-68	68	1	Transformer Assembly
100-69	69	1	Fuse holder for Fuse F3
100-70	70	1	Relay Panel
100-K	71	1	Ammeter
100-L	72	2	Push Button
100-M	73	1	F_3 Meter Fuse AGX 1/8
100-N	74	1	Fuse Holder
100-0	75	1	Film Cutout
100-P	76	2	CR-1 & CR-2 Control Relays
100-Q	77	5	Door Interlock Switch
100-R	78	1	Ground Lug
100-S	79	1	Enclosure (Timer Box)
100-T	80	1	Clock Assembly
100-U	81	1	Main Breaker
100-V	82	1	F_1 Control Fuse Non 10
100-X	83	1	No. 524 Assembly (Terminal Block)

PARTS REFERENCE NUMBERS
Listed by Page and Figure where Illustrated

parts	Illustrated		
Ref. No.	Page-Fig.	Page-Fig.	Page-Fig.
1	11-12	33-17	
2	32-14	33-15+16	34-19
3	34-19		
4	32-14	33-15	
5	34-19		
6	34-19		
7	34-19		
8	34-19		
9+10	32-14	33-15	
11	34-19		
12	32-14	33-17	
13 + 14+15	34-19		
16	32-14	33-17	
17	34-19		
18	32-14	33-15	
19	32-14	33-15	36-23
20	32-14	33-15	
21	32-14		
22	32-14	34-19	
23	11-12	32-14	
24	32-14	34-19	
25	34-19		
26	32-14	33-15	34-19
27+28	32-14		
29	34-19		
30	33-17		
31	32-14		
32	32-14	33-15	
33S	33-17		
33L	33-15		
34	11-12		
35+36	34-19		
37	32-14		
38	33-15	36-23	
39+40	36-23		
41+42	33-16	36-23	
43	36-23		
44	33-16	36-23	
45	11-12		
46	33-17	36-22	
47+48	36-22		
49	11-12	34-18+19	
50	36-22		

PARTS REFERENCE NUMBERS, Continued

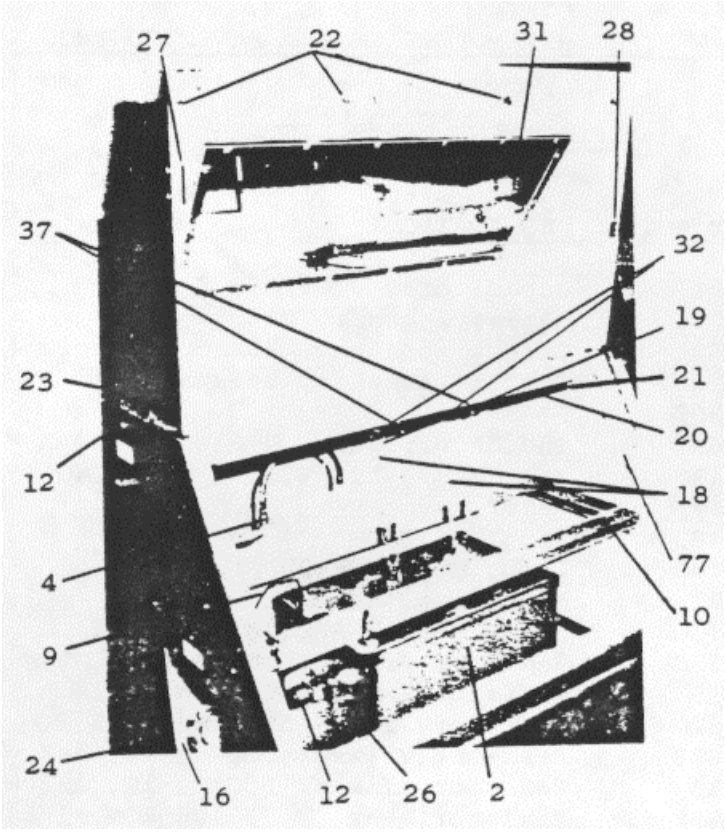
Parts Ref. No.	Illustrated Page-Fig.	Page-Fig.	Page-Fig.
60+61	34-18		
62	not used		
63	24-13	34-18	
64+65+66	34-18		
67	24-13		
68	34-18		
69	24-13	34-18	
70	34-18		
71	24-13		
72+73	24-13	34-18	
74	35-21		
75+76	34-18		
77	32-14	34-18	
78	34-18		
79+80+81	35-20	35-21	
82+83	35-21		

MODEL 4707 - HYPOT W/REMOTE RACK AND PANEL CONTROL SECTION

REPLACEMENT PARTS LIST

SYMBOL	PART NO.	DESCRIPTION
C-601-604	P15217	Capacitors, .001 mfd @ 1 KV
CA-1	P11734	Cable, 3 cond., #14
CB-1	30659	Circuit breaker, 25 amp, 2 pole (POWER)
CB-2	P14166	Circuit breaker, thermal; 5A
FL-1	P15362	Flasher
I-1,2	P16437	Indicator, 115 V @ 3 W (POWER & H.V.)
I-3,4	P16437	Indicator, 115 V, 3 W (WARNING INDICATORS)
M-1	10959	Meter
NE-1	P15485	Neon, NE-32
NE-2,3,4	P15485	Lamp, neon; NE-32
NE-601	P8591	Neon lamp, NE-2
PL-1	P11730	Plug, male (SAFETY INTERLOCK)
R-1,2,3	P15358	Resistor, fixed; 102 meg,25 KV @ 6 W (SERIES)
R-5	16459	Resistor, adj., 600 ohm, @ 12 W.
R-4	17482	Resistor, adj., 5K ohms @ 12 W.
R-601	P11823	Resistor, fixed; 500K + 1%, 1/2 W.
R-602	P8115	Resistor, fixed; 300K . 1%, 1/2 W.
R-603	P18983	Resistor, var., 750K - 10%, 1/2 W.
RECP-A	P17606	Receptacle, 22 cond., chassis mtg. female
RECP-1	P11729	Receptacle, female (SAFETY INTERLOCK)
RECT-601	P18972	Rectifier, controlled avalanche, 600 V.
RY-1	P16477	Relay, 2C w/aux., 25A
RY-3	P14947	Relay, overload
S-1	P17791	Switch, lever; 3 pos., 1C-1C (HIGH VOLTAGE)
S-3	P19443	Switch, key (LOCKOUT)
S-4	P9690	Switch, toggle; SPDT (OUTPUT CURRENT)
S-5	P14978	Switch, micro; SPDT, zero return interlock
T-1	16133	Transformer, var. (VOLTAGE)
T-2	30724	Transformer, H.V., 30 KV @ 5 KVA inter.
T-3	P15643	Transformer, 220 V. to 100 V.
TER-2,3,4	10304	Terminal (GROUND, SAFETY GROUND)
	17217	Scale, 0-30 KV AC
	15874	Cable assembly (GROUND)
	P16962	Plug, male, three prong

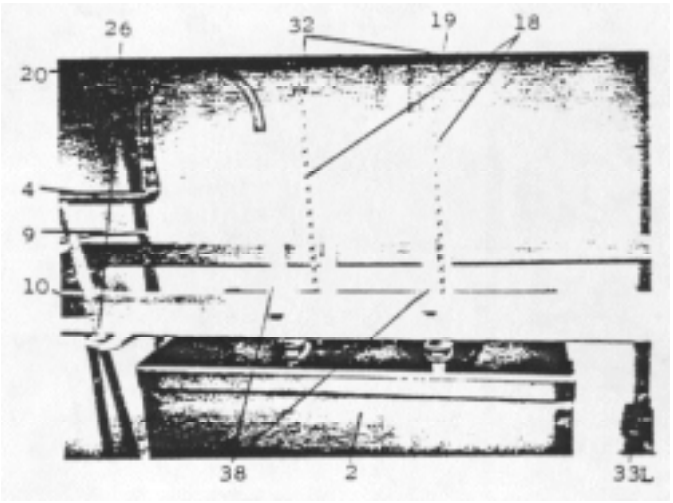
TEST CABINET - OPEN FOR LOADING



Ref. No.	Item
2	Tank Assembly
4	Water Line Assembly
9	Ground Rod Assembly
10	Fiber Glass Angle Mounting Assembly
12	Electrical Receptacle
16	Plexiglas For Probe
18	Ground Test Electrode
19	1" Ring for Chain Electrode
20	Black Plexiglas
21	Fiber Glass Angle
22	Cabinet Lid Handle
23	Plexiglas and Rubber Bumper
24	Exhaust Grill Assembly
26	Drain Control Lever
27	Ground Rod Trip Angle
28	Interlock Switch Trip Angle
31	Plexiglas, Door
32	Ground Electrode Terminal
37	Safety Hooks for Chain Electrodes
77	Door Interlock Switch

Figure 14.

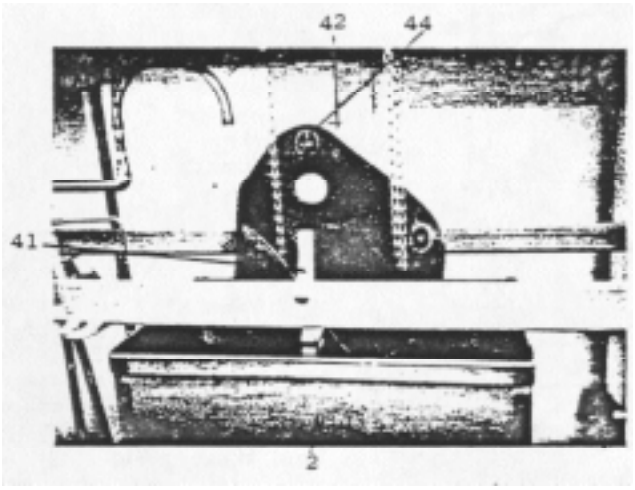
GLOVES IN TEST POSITION



Ref. No.	Item
2	Tank Assembly
4	Water Line Assembly
9	Ground Rod Assembly
10	Fiber Glass Angle Mounting Assembly
18	Ground Test Electrode
19	1" Slip Ring
20	Black Plexiglas
26	Drain Control Lever
32	Ground Electrode Terminal
33L	Door Handle (long)
38	Glove Holding Pin

Figure 15.

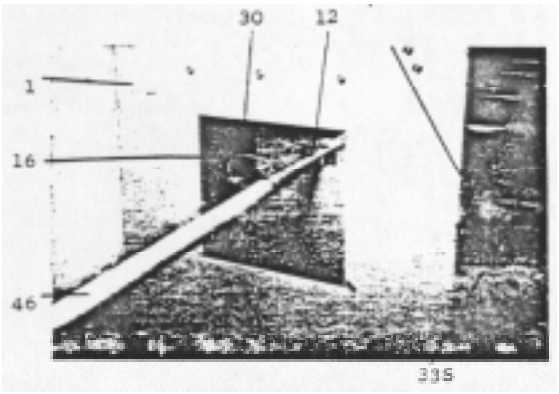
SLEEVE IN TEST POSITION



2	Tank Assembly
41	Sleeve Holding Pin
42	Sleeve Rack (plate)
44	Sleeve Rack Hooks

Figure 16.

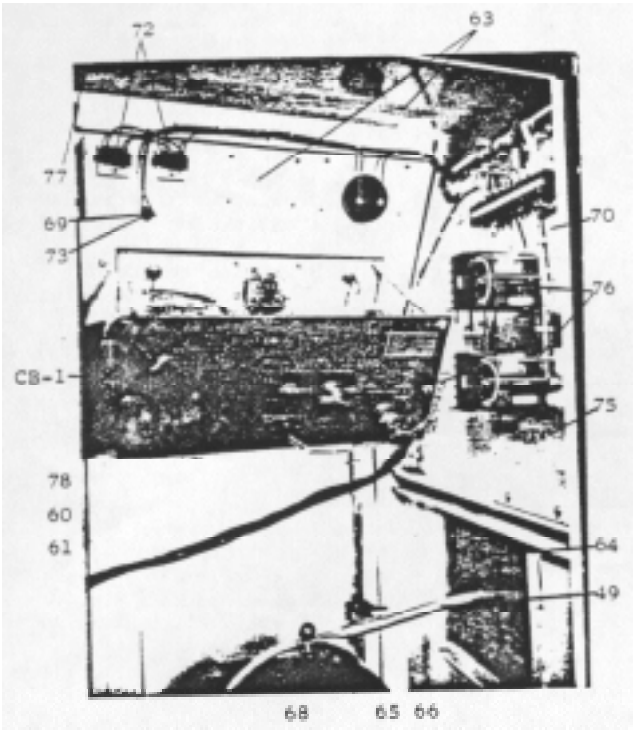
PROBE CONNECTION FOR AUXILIARY CAGE



1	Cabinet Assembly (Test Rack)
12	Electrical Receptacle
16	Plexiglas Fork Probe
30	Cover Assembly
33S	Door Handle (Short)
46	High Voltage Probe

Figure 17.

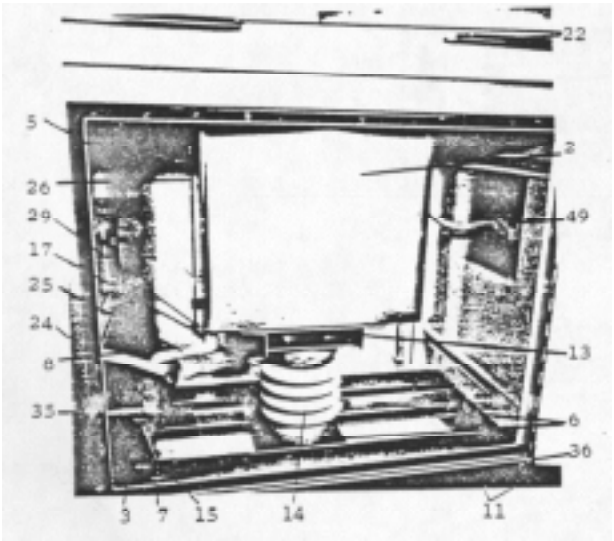
TRANSFORMER CABINET - REAR VIEW



Ref. No.	Item
49	High Voltage Cable
60	Electric, Junction Box (Power)
61	Electric. Connector
63	Cabinet Assembly, Transformer
64	Plexiglas, High Voltage Cable
65	Transformer Base Frame Assembly
66	Metal Plate
68	Transformer Assembly
69	Fuse Holder F_3
70	Relay Panel
72	Push Button
73	Meter Fuse F_3
75	Film Cutout
76	Control Relays
77	Door Interlock Switch
78	Ground Lug
CB-1	Circuit Breaker

Figure 18.

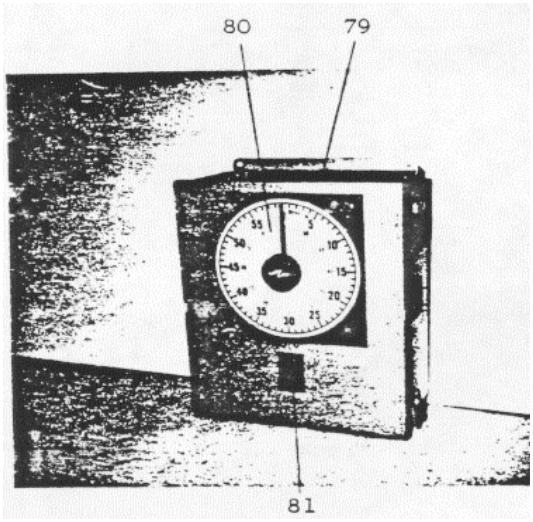
BOTTOM OF TEST RACK - FRONT VIEW



2	Tank Assy., Test Rack
3	Drain Pan Assembly
5	Elec. Conduit (Flex)
6	Station Post Base
7	Foot Pedal Assembly & Spring
8	Exhaust Fan
11	Adj. Leveling Screw
13	Tank Base
14	Station Post Insulator
15	Input Valve 3/8"
17	Drain Valve 1/2"
22	Cabinet Lid Handle
24	Exhaust Grill Assembly
25	Drain Piping - Plastic
26	Drain Control Lever
29	1/2" Street E11
35	3/8" Nipple
36	Metal Plate Reinforcing
49	High Voltage Cable (To Transformer)

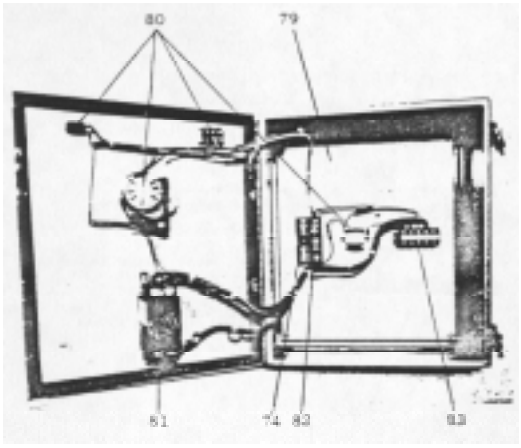
Figure 19.

TIMER AND POWER CONTROL PANEL



Ref . No.	Item
79	Enclosure (Timer Box)
80	Clock Assembly
81	Main Breaker

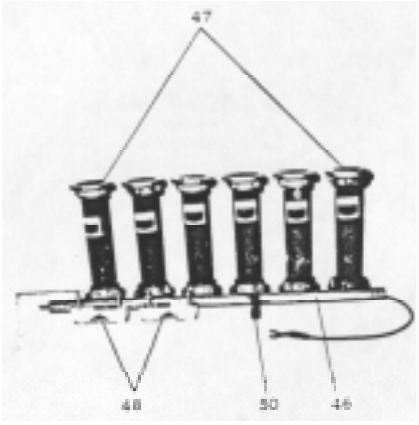
Figure 20.



Ref. No.	Item
74	Fuse Holder
79	Enclosure (Timer Box)
80	Clock Assembly
81	Main Breaker
82	Control Fuse
83	No. 524 Assembly (Terminal Block)

Figure 21.

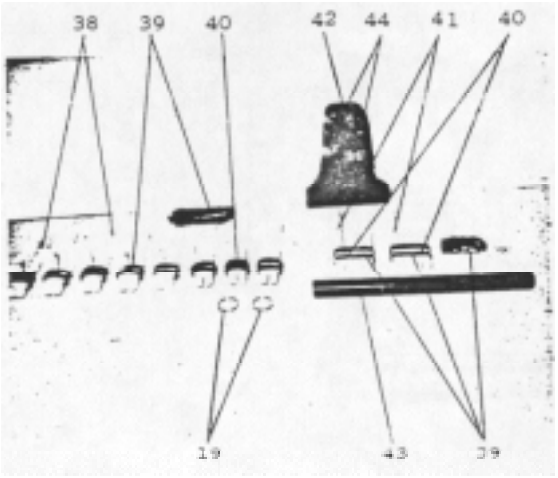
PARTS FOR CONNECTING AUXILIARY CAGE



Ref. No.	Item
46	High Voltage Probe
47	Insulator
48	Pipe Adapter/Line Hose Electrode
50	Insulated Ground Jack

Figure 22.

ACCESSORIES FOR TEST CABINET



Ref. No.	Item
19	1" Slip Ring (For Chain)
38	Glove Holding Pin
39	Rubber Ring
40	Pivot Pin
41	Sledge Holding Pin
42	Sleeve Rack (Panel)
43	Sleeve Bar
44	Sleeve Rack Hooks

Figure 23.

By Order of the Secretary of the Army:

E. C. MEYER
General, United States Army
Chief of Staff

Official:

J. C. PENNINGTON
Major General, United States Army
The Adjutant General

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