DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATOR, ORGANIZATIONAL, FIELD AND DEPOT MAINTENANCE MANUAL SHOP SET, AIRCRAFT MAINTENANCE, SEMITRAILER AND TRAILER MOUNTED, SET C2, ELECTRICAL SHOP

This copy is a reprint which includes current pages from Change 1.

HEADQUARTERS, DEPARTMENT OF THE ARMY

OCTOBER 1961

CHANG E
No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., *7 September 1972*

Operator, Organizational, Field
and Depot Maintenance Manual

SHOP SET, AIRCRAFT MAINTENANCE, SEMITRAILER
AND TRAILER MOUNTED, SET C-2, ELECTRICAL SHOP

TM 55-4920-211-15, 2 October 1961, is changed as follows:

Page 33. Paragraphs 57 and 58 are superseded as follows:

57. Purpose

This chapter furnishes the operator with sufficient information for preparation of the equipment comprising Shop Set, Aircraft Maintenance, Semitrailer and Trailer, C-2, Electrical Shop, for limited storage and shipment.

58. Methods

The methods outlined herein for shipment and limited storage apply to the shop set as a unit. It is the responsibility of the operator to become familiar with the technical manuals for each item of equipment in order to adequately prepare the item of equipment for shipment and limited storage.

Page 34. Add the following after the title of Section III:

(Refer to TM 750-244-1-4 for demolition instructions.)

Page 34. Paragraphs 61 through 64 are deleted.

By Order of the Secretary of the Army:

BRUCE PALMER, JR.
General, U. S. Army
Acting Chief of Staff

Official:
VERNE L. BOWERS
Major General, United States Army
The Adjutant General

DISTRIBUTION:
To be distributed in accordance with DA Form 12-31 (qty rqr block No. 94) Organizational Maintenance Requirements for All Fixed and Rotor Wing Aircraft.

TECHNICAL MANUAL
No. 55-4920-211-15

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D.C., 2 *October 1961*

Operator, Organizational, Field, and Depot Maintenance Manual

SHOP SET, AIRCRAFT MAINTENANCE, SEMITRAILER AND TRAILER MOUNTED, SET C-2, ELECTRICAL SHOP

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1. Scope

This manual is published for the use of operating and maintenance personnel to whom the end item or equipment is assigned. It contains information on the operation, lubrication, detail preventive maintenance services, and maintenance of the equipment, its accessories and auxiliaries; also packing, preservation, storing, and shipping procedures.

2. References

a. Current Technical References. Appendix I lists the technical manuals, lubrication orders, and other technical publications applicable to the equipment as noted in detailed instructions contained herein.

b. Maintenance Allocation.

(1) *Organizational maintenance allocation*. In general, the prescribed organizational maintenance responsibilities will apply in accordance with the extent of disassembly prescribed in the maintenance allocation chart (app. II) for cleaning, lubricating, or replacing repair parts. In all cases where the nature of the repair, modification, or adjustment is beyond the scope or facilities of the using organization, the applicable supporting maintenance unit should be informed so that trained personnel with suitable tools and equipment may be provided or other instructions issued.

(2) *Field and depot maintenance allocation*. The publication herein of instructions for complete disassembly and repair is not to be construed as authority for the performance by field maintenance units of those functions which are the responsibilities of depots. The prescribed maintenance responsibilities will apply as reflected in the allocation of maintenance parts in the applicable manual for the item of equipment. Provisioning of parts listed in chapters 8 and 9 of this manual for the item will be made to field maintenance only when the emergency nature of the maintenance to be performed has been certified by a responsible officer of the requisitioning organization.

3. Forms, Records, and Reports

a. General. Responsibility for the proper execution of forms, records, and reports rests upon the commanding officers of all units maintaining this equipment. However, the value of accurate records must be fully appreciated by all persons responsible for their compilation, maintenance, and use. Records, reports and authorized forms are normally utilized to indicate the type, quantity, and condition of material to be inspected, repaired, or used in repair. Properly executed forms convey authorization and serve as records for repair or replacement of material in the hands of troops and for delivery of material requiring further repair to shops, depots, etc. The forms, records, and reports establish the work required, the progress of the work within the shops, and the status of the material upon completion of its repair.

b. Authorized Forms. Consult the technical manual for the item of equipment for listing of forms required. For a complete listing of forms, refer to DA Pam 310-2.

c. Field Report of Accidents. The reports necessary to comply with the requirements of the Army safety program are prescribed in detail in the AR 385 series. These reports are required whenever accidents involving injury to personnel or damage to material occur.

d. Report of Unsatisfactory or Damaged Equipment or Material. Any suggestions for improvement in design and maintenance of equipment and repair parts, safety and efficiency of operation, or pertaining to the application of prescribed lubricants and/or preserving materials, or technical inaccuracies noted in Department of the Army publications, will be reported as prescribed in AR 700--88, using DA Form 468 (Unsatisfactory Equip-Report), or DD Form 6, (Report of Damaged or Improper Shipment) as prescribed in AR 700-58. Such suggestions are encouraged in order that other organizations may benefit. Do not report all failures that occur. Report only repeated or unsatisfactory design or material. However, reports will always be made when exceptionally costly equipment is involved. Refer also to AR 70048, and the printed instructions on DA Form 468.

Section II. DESCRIPTION AND DATA

4. Description

a. General. Shop Set, Aircraft Maintenance, Semitrailer and Trailer Mounted, C-2, Electrical Shop, consists of a semitrailer and trailer mounted van and necessary tools and equipment for an Army aviation field maintenance shop, operating in the field, performing the functions of an electrical shop. The shop set contains three systems, electrical pneumatic, and utility.

(1) *Electrical system*.

(*a*) A 80 kw, trailer mounted generator, connected to the shop electrical system by a power cable inserted in the external power receptacle, furnishes power for the shop. The generator supplies the shop with 110-208, 220-440 volt, 60 cycle, three phase, AC current. The external power receptacle feeds directly to the safety disconnect switch which is provided to enable the operator to disconnect the power source from the interior of the shop. An electric control panel (fig. 6), is mounted directly above the safety disconnect switch. The control panel contains 14 thermal-magnetic circuit breakers which serve as distribution centers for the current supplied to the equipment of the shop. overhead ceiling receptacles are provided to furnish current for small, electrically operated tools. Heavier equipment is connected directly to the electric control panel. Auxiliary electrical current is supplied to the shop through the external power receptacle when the shop generator is not in operation.

(*b*) A 5 kw generator is mounted in the forward section of the trailer to supply power for the battery shop. This generator furnishes 1 and 3 phase, 60 cycle AC current at 120 volts, line-to-neutral, 208 volt line-to-line, or 240 volt line-to-line.

(2) *Pneumatic system, semitrailer mounted shop set*. The air compressor (fig. 12), is electrically driven with a 5 cfm capacity at 175 psi. The compressor and air storage tank are mounted separately (figs. 21 and 22). Air lines are installed (figs. 14, 15, and 17), from the compressor to the air storage tank, from the air storage tank to the oil and water separator and regulators, and from the regulators to the ceiling outlets. The pneumatic system controls and instruments (fig. 7), are mounted as a unit. This unit contains an oil and water separator for collecting and draining off accumulated oil and water, a source. pressure gage, 2

regulators, for maintaining a steady operating pressure, 2 operating pressure gages, check units, and valves to control or disconnect the air pressure. An auxiliary air supply connection (fig. 16), is provided for receiving air into the air storage tank when the compressor is not in operation and may also be used as a connection for supplying air pressure to other shops when the compressor is operating.

(3) *Utility system.* The utility system consists of 1 each, 1 3/4 x 30 x 21inch maple bench top; 3 each, 1 3/4 x 30 x 42-inch maple bench tops; 1 each, 1 3/4 x 30 x 84-inch, maple bench top, 1 each, 33 x 28 x 42-inch, 4-shelf storage cabinet; 1 each 33 x 28 x 21 inch 10-drawer storage cabinet; and 4 each, 33 x 28 x 42 inch, 12-drawer storage cabinets. The maple bench tops are used as working surfaces and for mounting equipment. The cabinets are used for storing handtools and small items of equipment (paras. 135 through 137).

b. Identification. Identification and instruction markings are listed in figures 1 through 5.

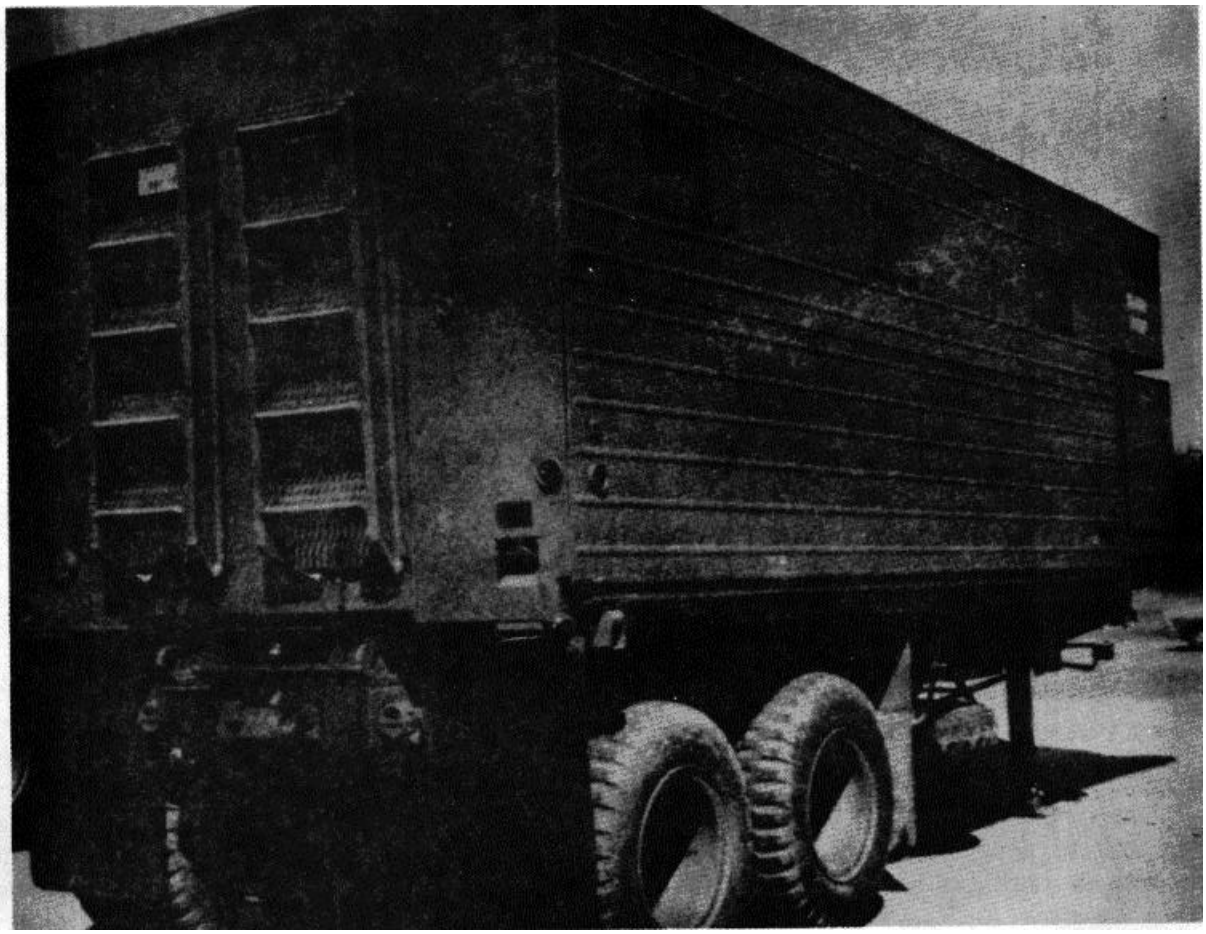


Figure 1. Shop set, C-2, electrical shop, semitrailer.

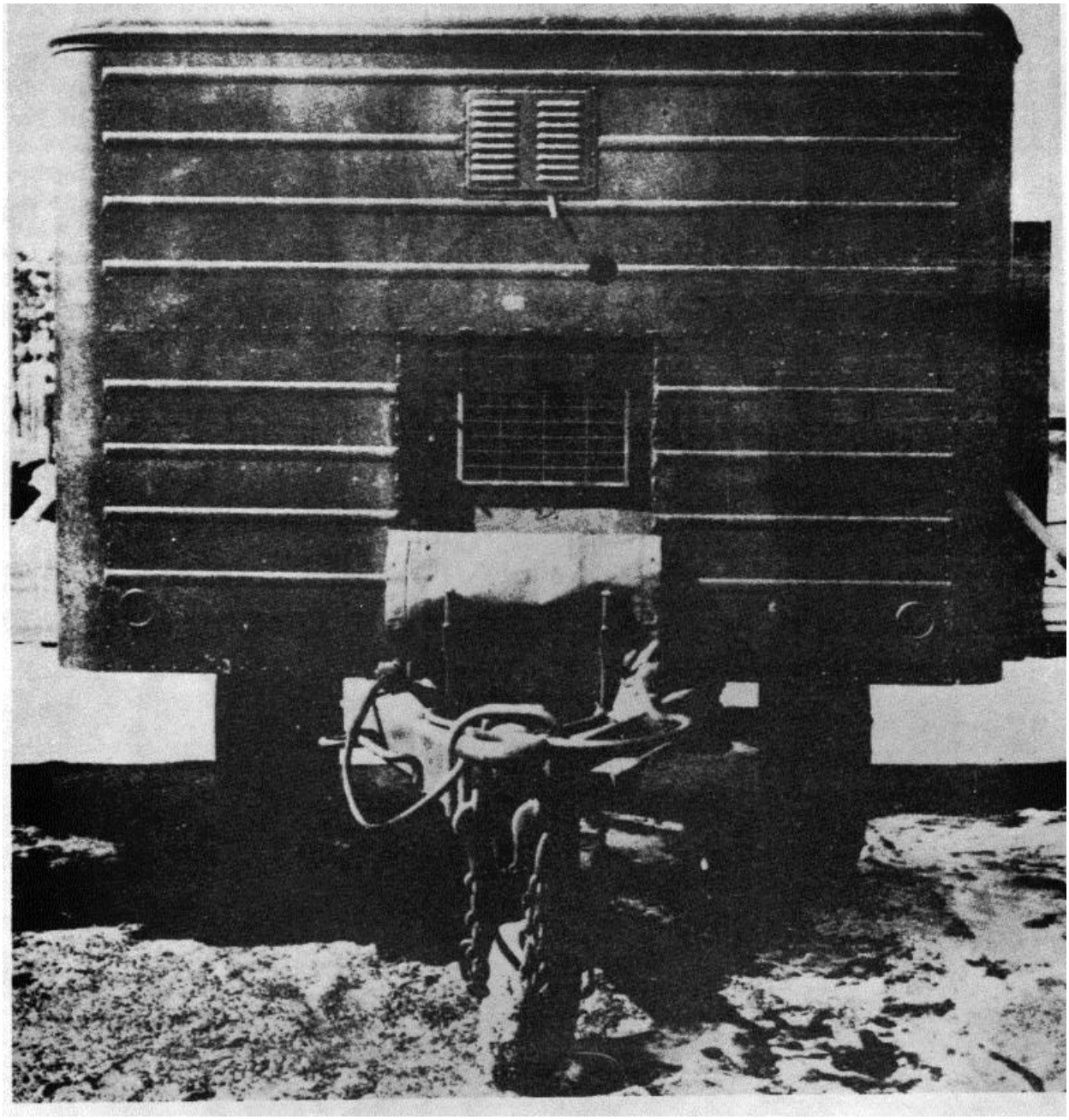


Figure 2. Shop Set, C-2, electrical shop, trailer.

c. List of Components. A list of the components is contained in SM 55-4-4920-S36.

d. Deviation in Models. This manual applies only to Shop Set, Aircraft Maintenance, Semitrailer and Trailer Mounted, C-2, Electrical Shop, as defined in SM 55-4-920-S36.

5. Tabulated Data

a. Organizational Maintenance Data, Semi-trailer Mounted Shop.

Model.....C-2
Overall Dimensions:
Overall length .....319 in.

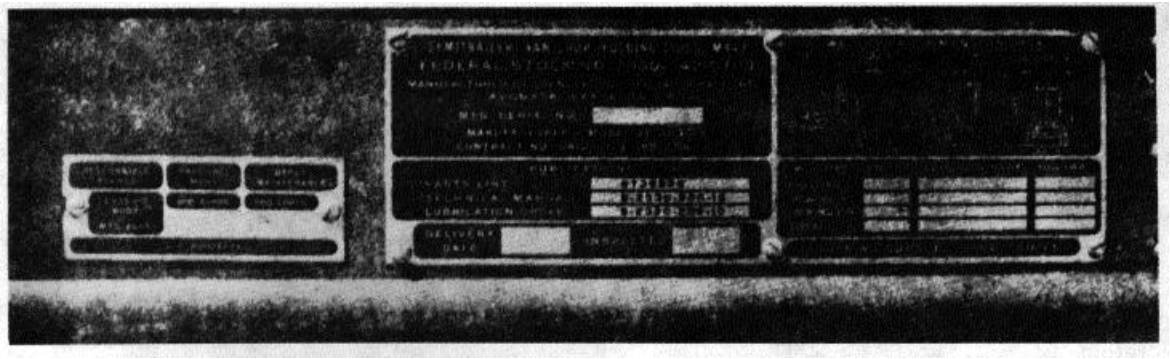


Figure 3. Identification plates, semitrailer mounted, Shop Set C-2.

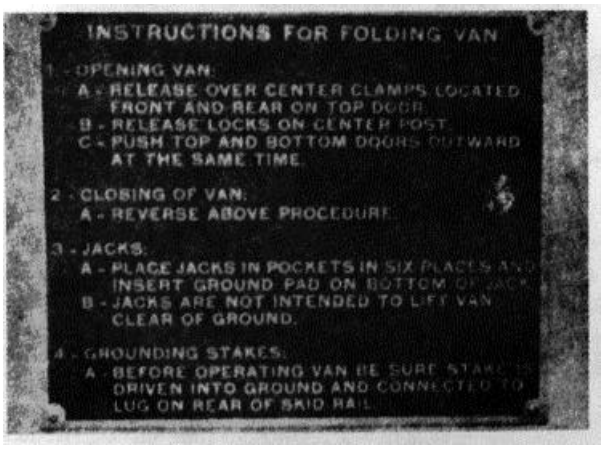


Figure 4. Instruction plate, semitrailer mounted, Shop Set C-2.

Overall width .....96 in.
Overall height
(loaded). .....132 in.
Height of chassis
(loaded). .....40 1/2 in.
Overall width with
sides folded out. .....166 1/2 in.
Volume .....2,288 cu. ft.
Total Weight .....21,420 lb.

b. Organizational Maintenance Data, Trailer Mounted Shop.

Model C-2
Overall Dimensions:
Overall length .....165 1/2 in.
Overall width .....91 in.
Overall height .....105 5/8 in.
Inside Dimensions:
Length .....96 in.
Width .....86 in.
Height .....61 in.

Figure 5. Identification and instruction plate, trailer mounted, Shop Set C-2.

Volume ..... 884 cu. ft.
Total weight ..... 4,780 lb.

c. Field and Depot Maintenance Data.

(1) *Electrical system, semitrailer mounted shop*.

Power source ..... Generator, gasoline engine driven.
Generator specification. ..... Trailer Mounted, liquid cooled, 4-wheels, pneumatic tires.
Generator rating. ..... Three phase, 30 kw, 120-208, 220-440 v, AC, 3 phase 60 cycle operation; or 25 kw, 120-240 v, AC, line-to-line, single phase, 50 cycle operation.
Electrical connections. ..... Power cable, male to female joy plug for shop, or auxiliary operation.
Safety devices ..... Safety disconnect switch.
Controls ..... Thermal-magnetic circuit breaker panel; 14 breakers (fig. 6).
Electrical connections, equipment. ..... Receptacles and circuit breakers (fig. 10).

(2) *Electrical system, trailer mounted shop set*.

Power source ..... Generator, gasoline engine driven.
Generator make and model. ..... Military Specification MIL-G-12373, Type III, Class A.
Generator mounting. ..... Skid type.
Generator rating ..... Single and three phase, 6 kw, 208 v, AC, line-to-line, 120 v, AC, line-to-neutral or line-to-line, 3 phase, 60 cycle operation; or 5 kw, 120-240 v, AC, line-to-line, single phase 60 cycle operation.
Electrical connections, shop. ..... Power cable, male to female joy plug.
Safety devices ..... Circuit breakers and switches (fig. 11).
Controls ..... Thermal-magnetic circuit breaker panel; 14 breakers (fig. 6).
Electrical connections ..... Receptacles and circuit breakers (figs. 10 and 11).

(3) *Pneumatic system, semitrailer mounted shop set.*

Power source ..... Air compressor, reciprocating, electric motor driven.
Compressor make and model. ..... Military Specification MIL-C-13874, Class A, Style I.
Compressor mounting. ..... Bolt down (figs. 21 and 22).
Compressor rating. ..... 5 cfm 175 psi.
Power supply required. ..... 220 v, AC, three phase, 60 cycle.
Pneumatic connections, shop. ..... Quick disconnect, air supply tank.
Safety devices ..... Safety relief valve, refer to TM for the Compressor.
Controls ..... Shut off valve (fig. 7); Oil and water separator, gages, regulators, valves, and check units (fig. 7).
Pneumatic connections, equipment. ..... Quick disconnect fittings (fig. 16).

(4) *Utility system*:

Type equipment .... Bench tops maple, Size A, C, and D; Storage cabinets, Types I, II, and III.
Equipment function ..... Bench tops-work areas, and mounting bases. Storqo age cabinets-Storage of hand tools and accessories.
Equipment mounting ..... Bench tops-bolt mounted to storage cabinets. Storage cabinets—bolt mounted to floor and adjacent cabinets.

CHAPTER 2

OPERATING INSTRUCTIONS (OPERATOR)

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

6. General

When a new or used shop set is received by the operator, it is his responsibility to determine whether the material has been properly prepared for service by the supplying organization and to be sure it is in condition to perform its functions. For this purpose, inspect all assemblies and parts to be sure they are properly assembled, secured, cleaned, adjusted, and lubricated (Refer to paras. 135 through 140 for assembly, location, and mounting details of equipment). Make a record of any malfunctions. Notify the responsible maintenance echelon of deficiencies for correction as quickly as possible.

7. Before Operation Service

a. Lubrication. Lubricate equipment in accordance with paragraphs 29 and 30.

b. Fueling Instructions. Service equipment with fuel specified in operational and service manuals for the specific item. The fueling instructions contained in operational and service manuals of the equipment form a part of this manual.

Caution

Serious damage to equipment can result when the wrong type fuel is used in servicing it.

Section II. CONTROLS AND INSTRUMENTS

8. General

This section describes, locates, illustrates, and furnishes the operator with sufficient information pertaining to the various controls or instruments provided for the proper operation of the equipment. It is essential that the operator know how to perform every operation the equipment is capable of performing.

9. Electric Controls and Instruments

An electric control panel is located at the right rear corner of the interior of the shop. This panel is equipped with circuit breakers and an identification list (fig. 6); additional circuits may be installed, when necessary, in the panel. A safety switch is mounted beneath the panel on the incoming line. A layout (wiring diagram) of the control panel is contained in figures 10 and 11. An outside power receptacle is mounted on the right rear of the shop exterior.

Caution

Do not modify power receptacles or electrical cable.

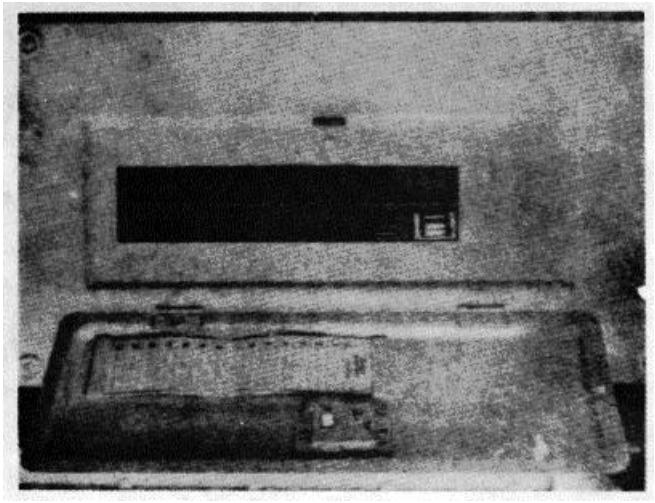


Figure 6. Electrical control panel and identification list.

10. Pneumatic Controls and Instruments

Pneumatic controls and instruments mounted as a part of the air lines installation as illustrated in figure 7. These controls and instruments include valves, regulators, separators, gages, and check units. The air line is installed starting at the left front of the bottom of the shop, passing through the floor to the regulators and separators. The air line is divided into two sections after passing the separators, with one section continuing down each side of the shop, along the ceiling. Two check unit couplings are mounted on each side and another one on the outside front at the bottom of the incoming line.

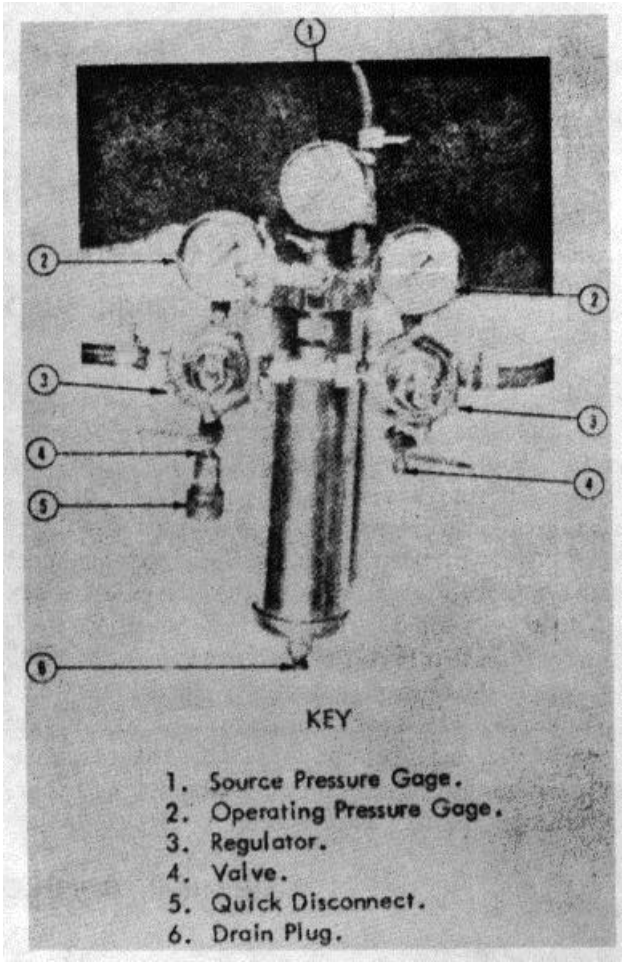


Figure 7. Pneumatic controls and instruments, Semitrailer Mounted Shop Set C-2.

Section III. OPERATION UNDER USUAL CONDITIONS

11. General

Instructions in this section are for the information and guidance of personnel responsible for the operation of this equipment. It is essential that the operator know how to perform every operation the equipment is capable of performing.

12. Preparation For Starting

a. Perform the "before operation" daily service (chapter 3, section III).

b. Assure that all equipment control switches ,are in the "OFF" position.

c. Start power supply equipment.

Note

When external power supply is used, check connections before starting equipment.

Warning

Use compressed air only for the purpose for which it is intended. Serious injuries to personnel can result from misuse.

d. The equipment comprising the shop set (para. 4), is now ready for operation.

e. It is essential that the operator be completely familiar the manuals for the equipment.

13. Shutdown of Shop Set

Shutdown instructions for the units comprising Shop Set, Aircraft Maintenance,

Semitrailer and Trailer Mounted, C-2 Electrical Shop (para. 4), are contained in the manuals issued for the individual items. It is essential that the operator understand these instructions.

14. Operating Details

a. General. These instructions provide the operator -with necessary details for operation of the equipment in the shop set.

b. Electrical System.

(1) Start generators in accordance with the technical manual for the generator.

(2) Check generator instruments to assure that proper current is being supplied, adjust controls as necessary.

(3) Ascertain that circuit breakers in electrical panel are in the "ON" position for circuits to be used.

(4) Check for loose connections, blown fuses, tripped circuit breakers, and frayed wire covers.

(5) Plug cords of equipment to be operated into receptacles provided.

Note

When external power source is utilized, omit steps (1) and (2) above.

c. Pneumatic System.

(1) Start the air compressor in accordance with the technical manual for the compressor.

(2) Allow sufficient time for build-up of source pressure in the tank and drain the oil and water separator (fig. 7).

Note. The correct source pressure is 75 to 150 psi.

(3) Close drain when water or oil cease to drain from separator.

(4) Adjust controls (fig. 7), to obtain an operating pressure of 75 psi.

(5) Check connections for leaks, security of fittings, and conditions.

(6) Insert adapters attached pneumatic equipment hose into receptacles provided.

Note

When an external power source is utilized for pneumatic power, omit (1) above.

15. Movement of Equipment

a. Perform "at halt" and "after operation" daily service (table I, para. 32).

b. Store all tools and equipment.

c. Install security locking bars on cabinets with drawers (fig. 8).

d. Secure tools or equipment too large for bin storage, with special fastenings provided (figs. 9 and 24 through 27).

e. Secure equipment in open bins with web straps or special fastenings (fig. 8).

f. Store cable or hose in locations provided.

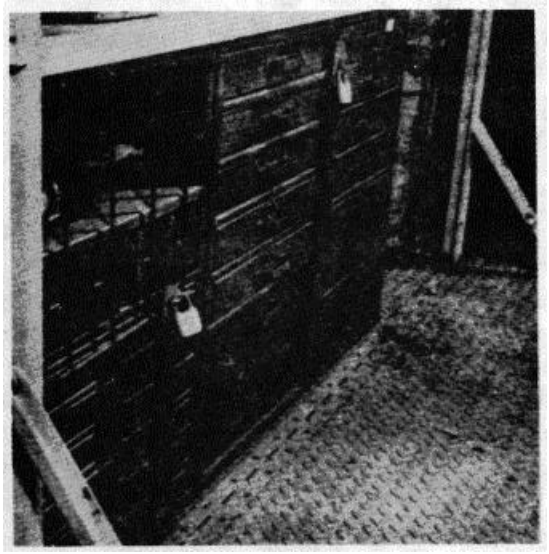


Figure 8. Security locking bars, open bin security fastenings; typical installation.

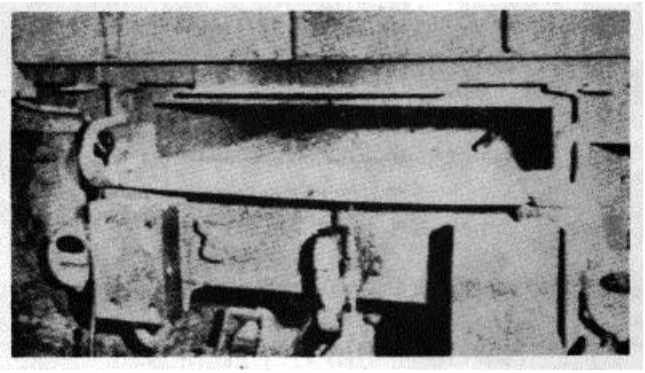


Figure D. Jack stowage box.

Section IV. OPERATION OF ONE UNIT IN CONJUNCTION WITH ANOTHER ACCESSORY OR AUXILIARY

16. Maintenance and Operating Instructions

Maintenance and operating instructions for the auxiliary equipment to be used in conjunction with this shop set are listed in the separate technical manual of the auxiliary.

17. Auxiliary Connections

Connections are provided for auxiliary pneumatic and electrical hook-ups. The location, purpose, and description of these auxiliary outlets are described in paragraphs 77 through 79. This chapter details operating instructions for the auxiliary connections.

Section V. OPERATION UNDER UNUSUAL CONDITIONS

18. General Conditions

a. In addition to the operating procedures described for usual conditions, special instructions of a technical nature for operating and servicing this equipment under unusual conditions are contained or referred to herein. In addition to the normal preventive maintenance service, special care in cleaning and lubrication must be observed where extremes of temperature, humidity, and terrain conditions are present or anticipated. Proper cleaning, lubrication, and storage and handling of fuels and lubricants not only insures proper operation and functioning but also guards against excessive wear of the working parts and deterioration of materials.

Caution

It is imperative that the approved practices and precautions be followed. A detailed study of the specific technical manuals is essential for use of this equipment under unusual conditions.

b. When recurrent failure of equipment results from subjection to extreme conditions, report the condition on DA Form 468.

19. Extreme Cold Weather Conditions

a. General Problems.

(1) Extensive preparation of equipment scheduled for operation in extreme cold weather is necessary. Generally, extreme cold will cause lubricants to congeal, freeze batteries or prevent them from furnishing sufficient current for cold weather starting, crack insulation and cause electrical short circuits, prevent fuel from vaporizing and properly combining with air to form a combustible mixture for starting, and will abuse the various construction materials to become hard, brittle, and easily damaged or broken.

(2) The cooling systems must be prepared and protected for temperatures below +32°F., in accordance with instructions in specific manuals on draining and cleaning the systems and the application and checking of antifreeze compounds to suit the anticipated conditions.

Caution

It is imperative that the approved practices and precautions be followed. Refer to specific manuals applicable to the equipment. This must be considered an essential part of this manual, not merely an explanatory supplement to it.

b. Fuels, Lubricants, and Antifreeze Compounds (Storage, Handling, and Use.)

(1) The operation of equipment at arctic temperatures will depend to a great extent upon the condition of the fuels, lubricants, and antifreeze compounds used in the equipment. Immediate effects of careless storage and handling or improper use of these materials are not always apparent, but any deviation from proper procedures may cause trouble at the least expected time.

(2) In arctic operations, contamination with moisture is a source of many

difficulties. Moisture can be the result of snow getting into the product, condensation due to "breathing" of a partially filled container, or moisture condensed from warm air in a partially filled container when a product is brought outdoors from room temperature. Other impurities will also contaminate fuels and lubricants so their usefulness is impaired.

20. Extreme Cold Weather Operation

a. General.

(1) The operator must always be on the alert for indications of the effect of cold weather on the equipment.

(2) The operator must exercise caution when placing the equipment in operation after a shutdown. Thickened lubricants may cause failure of parts.

Warm up motorized equipment thoroughly before operating, check source voltage of electrical equipment to ascertain that sufficient power is available to prevent motor burnouts.

(3) Constantly note instrument readings. If instrument readings consistently deviate from normal, stop the equipment and investigate cause.

b. At Stop.

(1) When halted for short shutdown periods, the equipment should be sheltered from the wind.

(2) When preparing equipment for shutdown periods, place control levers in the neutral position to prevent them from possible freezing in an engaged position. Freezing may occur when water is present due to condensation.

(3) Clean all equipment of ice and condensate as soon as possible after operation. If the canvas covers are not installed, be sure to protect all equipment against entrance of loose, drifting snow during the halt.

(4) If heater is not in operation, the storage batteries should be removed and stored in a warm place.

(5) Refuel equipment immediately in order to reduce condensation in the fuel tanks. Prior to refueling, open fuel tank draincock and drain off any accumulated water.

(6) Immediately after shutdown, start the heater and check to be sure it operates effectively. The heater should eliminate the necessity of removing the batteries to warm storage, and is designed to operate unattended overnight.

(7) Open draincocks to remove liquid from water separators and cooling systems and inspect draincocks for obstructions. Remove any foreign material or obstructions from draincocks. Leave draincocks in full open position while equipment is inoperative.

21. Operation in Extreme Hot Weather Conditions

a. General. Operation of the equipment in extreme hot weather conditions requires efficient cooling and proper lubrication. Halt the equipment for a cooling off period whenever necessary and conditions permit. Frequently inspect and service cooling units, oil filters, and air cleaners. Check ventilators periodically for cracks and obstructions. heck lubricants for viscosity and lubricating ability.

b. At Stop.

(1) Do not leave equipment in the sun for long periods. Place equipment under cover to protect if from the sun, sand, and dust when possible.

(2) Cover inactive equipment with tarpaulins if no other suitable shelter is available.

(3) Equipment inactive for long periods in hot humid weather is subject to rapid rusting and accumulation of fungi growth. Make frequent inspections and clean and lubricate to prevent excessive deterioration. Protest cooling systems with rust inhibiter compound. Remove the batteries and store in a cool place.

22. Operation in Extreme Wet Climate

Mud, water, and high humidity are enemies of the equipment in this shop set. Particular attention should be paid to formation of rust, mud scale, dirt buildup, and mildew. All equipment exposed to these conditions should be cleaned and oiled frequently in order to preserve the operating efficiency.

23. Operation in Snow and Ice

The precautions listed in paragraphs 18 and 19 apply to operating the equipment in snow and ice.

24. Operation in Salt. Water Areas

Corrosion is the major problem presented by operation of the equipment in salt water areas. Particular attention should be given to application of corrosion preventive compounds, cleaning of equipment, storage, and touchup of painted areas. Remove all traces of salt water and salt water residue from the exterior of the shop by thoroughly washing the equipment with fresh water. After drying, apply a solution of 75 percent lubricating oil, and 25 percent corrosion preventive compound. Military Specification MILC-6529, Type I, to all surfaces not protected by paint.

Caution

Do not allow this mixture to come into contact with rubber materials or parts which are exposed to direct flame.

Operating equipment, including handtools, may be protected by an application, to exterior surfaces, of corrosion preventive compound, Military Specification MILC-16173, Grade I.

25. Operation in Extreme Dust Conditions

Operation of the equipment under this condition necessitates the frequent inspection of unprotected surfaces. All lubricated surfaces should be cleaned periodically and the contaminated lubricant replaced with uncontaminated lubricant.

26. Operation at High Altitudes

Overheating of equipment and deviation in instrument readings constitute the major problems of operating equipment at high altitudes. Intake ducts, filters, and water supply must be checked at frequent intervals as a preventive measure for overheating.

Caution

Instruments not compensated for high altitude operation should be adjusted in accordance with instructions contained in specific manuals by second echelon maintenance personnel.

CHAPTER 3

MAINTENANCE INSTRUCTIONS (OPERATOR)

Section I. SPECIAL ORGANIZATIONAL TOOLS AND EQUIPMENT

27. General

No special tools or equipment are required for operator maintenance of this shop set.
Special tools and equipment required for operator maintenance of individual items of equipment are listed in the technical manual for the item.

28. On Vehicle Material (OVM)

Lists of tools and parts attached to the equipment are in the manual for the specific items.

Section II. LUBRICATION

29. General

A lubrication order is issued for each item of equipment and is to be carried with it at all times. Lubrication orders prescribe approved lubrication procedures. The instructions contained therein are mandatory.

30. Detailed Lubrication Instructions

a. Care of Lubricants. When storing and handling lubricants, make certain the containers are clean and securely covered to prevent dirt, dust, or other foreign matter from entering. Keep lubrication equipment in a place where it will be safe from damage and free of dirt. Section V. of chanter 2. Contains lubrication instructions for the protection of equipment under unusual conditions.

b. Cleaning. Clean all surfaces surrounding the points to be lubricated before applying the lubricant. Use an approved cleaning solvent to wash the surfaces. Wipe off all excess lubricant after lubricating.

c. Point of application. The points of application are illustrated in the applicable lubrication order. Follow the detailed lubrication instructions illustrated beneath each lubrication point indicating procedures to be followed at each point. Apply the lubricant indicated on the lubrication order key.

Section III. PREVENTIVE MAINTENANCE SERVICES

31. General

a. Responsibility and Intervals. The primary function of preventive maintenance is to prevent breakdowns and, therefore, the need for repair. Preventive maintenance services which are the responsibility of the operator will be performed before operation, during operation, at halt, and after operation (table I, para. 32)

b. *Before Operation Service*. This is a brief service to ascertain that the equipment is ready for operation; it is essentially a check to determine if conditions affecting the equipment's readiness have changed since the last after operation service.

c. *During Operation Service*. This service consists of the detection of unsatisfactory performance while the equipment is in operation;

the operator should be alert for any unusual noises, vibrations, or irregularities of performance.

d. At Halt Service. This service will consist of a brief visual inspection of equipment for condition, security, and wear; the removal of foreign material from equipment; and the cleaning of equipment that might be damaged by allowing existing conditions to continue.

e. After Operation Service. This service consists of investigating any deficiencies noted during operation and performing certain phases of the "before operation" service as noted in table I. It is the basic daily service for equipment and consist of correcting, insofar as possible, any operating deficiencies; in this manner, the equipment is prepared to operate upon short notice.

f. Inspection. The general inspection of each item is generally a check to see whether the item is in good condition, correctly assembled, secure, and not excessively worn.

g. Definition of Terms. Terms used to describe the inspection requirements of this section are defined as follows:

(1) *Good condition*. This is usually an external inspection to determine whether the unit is damaged beyond serviceable limits. The term "good condition" is explained further by the following: Not bent or twisted, not chafed or burned, not broken or cracked, not bare or frayed, not dented or collapsed, not torn or cut, not deteriorated.

(2) *Correctly reassembled*. This term refers to the inspection of a unit to see that it is in the normal assembled position. It is usually an external visual inspection.

(3) *Secure*. This is usually an external visual inspection or a check by hand or wrench for looseness. Such an examination must include any brackets, lockwashers, locknuts, locking wires, or cotter pins used.

(4) *Excessively worn*. This inspection is to determine whether equipment is worn beyond serviceable limits or to a point likely to result in failure if the unit is not replaced before the next scheduled inspection.

32. Specific Procedures for Operator

Table I lists the specific procedure to be performed on the shop set by the operator in daily service. An X in a column indicates that the procedure opposite it should be performed during that part of the daily service in which it appears.

Table I. Operator Daily Service.

Interval				Procedure
Before Operator	During Operator	At Halt	After Operator	
				USUAL CONDITIONS
X	--	X	X	*Visual Inspection of Equipment.* Inspect for condition, security and wear.
			X	*Cleaning of Equipment*. Wipe dirt, oil, rust, corrosion, and debris from equipment. Refer to Chapter 3, Section III, for cleaning instructions.
X	--	X	X	*Operating Units*. Check all units for correct assembly and loose mounting. Adjust as necessary.
X	--	--	X	*Power Supplies*. Check for loose power supply connections; check for frayed or cracked insulation.
	X	--	--	*Operation*. While equipment is operating, check for unusual sounds, vibration, or malfunction.
X	--	--	X	*Lubrication*. Lubricate in accordance with chapter 3, section II.
				UNUSUAL CONDITIONS
X	X	X	X	*Extreme Cold*. (Chapter 2, Section V).
X	X	X	X	*Extreme Heat*. (Chapter 2, Section V).
X	--	X	X	*Extreme Wet*. (Chapter 2, Section V).
X	X	X	X	*Snow and Ice*. (Chapter 2, Section V).
X		X	X	*Salt Water*. (Chapter 2, Section V).
X	--	X	X	*Dust*. ('Chapter 2, section V).
X	X	X	X	*High Altitude*. (Chapter 2, Section V).

33. Cleaning

Any special cleaning instructions required for specific mechanisms or parts are contained in the technical manual for the equipment.

General cleaning instructions are as follows:

a. Use dry-cleaning solvent to clean or wash grease or oil from all metal parts.

b. A solution of one part grease-cleaning compound to four parts of dry-cleaning solvent may be used for dissolving grease and oil from the shop and equipment other than optical instruments. After cleaning, use cold water on exterior surfaces of the shop, to rinse off any solution which remains. Operating equipment and handtools, exclusive of optical instruments may be wiped with a light lubricating oil.

c. When authorized to install new parts, remove any preservative materials; such as rust-preventive compound, protective grease, etc; prepare parts as required (oil seals, etc); and for those parts requiring lubrication, apply the lubricant prescribed in the lubrication order.

d. Nameplates, caution plates, and instruction plates made of steel rust very rapidly. When they are found to be in a rusted condition, they should be thoroughly cleaned and heavily coated with an application of clear lacquer.

34. General Precautions in Cleaning

a. Drycleaning solvent is flammable and should not be used near an open flame. Fire extinguishers should be provided when these materials are used. Use only in well ventilated places.

b. Drycleaning solvent evaporates quickly and has a drying effect on the skin. If used without gloves, it may cause cracks in the skin and, in the case of some individuals, a mild irritation or inflammation.

c. Avoid getting petroleum products, such as dry-cleaning solvent, mineral spirits paint thinner, engine fuels, or lubricants, on rubber parts as they will deteriorate the rubber.

d. The use of diesel fuel oil, gasoline, or benzene (benzol) for cleaning is prohibited.

Section IV. TROUBLESHOOTING

35. Use of Troubleshooting Section

This section provides information useful in diagnosing and correcting unsatisfactory operation or failure of the shop set or any of its components. Each trouble symptom stated is followed by a list of probably causes of the trouble. The possible remedy recommended is described opposite the probably cause.

36. Procedure

To correct malfunctioning of equipment, the cause should be systematically isolated in accordance with instructions in the following paragraphs. If the correction of the malfunction is beyond the scope of the operator's function, refer the discrepancy to the proper maintenance echelon for correction.

37. Electrical Equipment Operates at Slow or Reduced Speed

Probable cause	*Possible remedy*
Loose connectors	Tighten connectors.
One circuit breaker in "OFF" position. (208-220 volt equipment).	Return breaker to "ON" position.
Cause beyond maintenance scope of operator.	Notify second maintenance echelon.

38. Electrical Equipment Stops During Operation

Probable cause	*Possible remedy*
Power cord of equipment not properly plugged into receptacle.	Remove plug from receptacle and re-insert fully into receptacle.

Probable cause	*Possible remedy*
Equipment overheated	Reduce operating speed; allow equipment to cool and re-start.
Circuit breaker tripped to "OFF' position.	Reset circuit breaker to "ON" position; re-start
Cause beyond maintenance scope of operator.	Notify second maintenance echelon.

39. Electrical Equipment Will Not Start

Probable cause	*Possible remedy*
Power cord of equipment not plugged into receptacle.	Insert plug of equipment cord into receptacle.
No power from generator	Check for generator operation; re-start generator.
Circuit breaker sin electrical panel in "OFF" position.	Reset circuit breakers to "ON" position.
Safety disconnect switch open	Close safety disconnect switch.
Cause beyond maintenance scope of operator.	Notify second maintenance echelon.

40. Pneumatic Equipment Operates at Slow or Reduced Speed

Probable cause	*Possible remedy*
Air compressor not operating.	Start air compressor; allow source pressure to reach operational level; re-start equipment.
Air pressure not properly regulated at water separator.	Adjust pressure regulator to proper level (76 psi).
Loose connection at air hose quick disconnect adapter.	Re-seat adapter.
Water in air	Drain water separator.
Cause beyond maintenance scope of operator.	Notify second maintenance echelon.

41. Pneumatic Equipment Stops During Operation

Probable cause	*Possible remedy*
Air compressor stopped	Check compressor operation; start compressor.
Equipment overloaded	Reduce feed, pressure, or speed as necessary,
Air line disconnected	Connect air line.
Cause beyond maintenance scope of operator	Notify second maintenance echelon.

42. Pneumatic Equipment Will Not Start

Probable cause	*Possible remedy*
No air pressure—compressor stopped.	Start compressor.
Air pressure cut off at pressure regulator.	Adjust pressure regulator to obtain pressure of 765 psi.
Air hose of equipment not properly connected to adapter.	Remove air hose from supply at quick disconnect; clean adapter and re-install hose.
Cause beyond maintenance scope of operator.	Notify second maintenance echelon.

43. Excessive Vibration of Equipment

Probable cause	*Possible remedy*
Loose mounting bolts	Tighten or replace bolts as necessary.
Equipment load improperly distributed.	Readjust load.
Operating speed of equipment too high.	Reduce speed in accordance with technical manual for equipment.
Equipment load too heavy.	Reduce load to recommended limits in accordance with technical manual for equipment.
Cause beyond maintenance scope of operator.	Notify second maintenance echelon.

44. Excessive Noise

Probable cause	*Possible remedy*
Equipment receiving improper lubrication.	Lubricate in accordance with paragraphs 29 and 30 and applicable lubrication order.
Equipment being used improperly	Consult technical manual for equipment; use in accordance with recommendations in technical manual.
Cause beyond maintenance of operator.	Notify second maintenance echelon.

Section V. ELECTRICAL SYSTEM

45. General

The electrical system of Shop Set, Aircraft Maintenance, Semitrailer and Trailer Mounted, C-2 Electrical Shop, is 110-220 volt, single phase, and 208 volt, 3 phase system and 110-208, 220-440 volt, 3 phase, 60 cycle system. Electrical power is supplied to the shop from a generator or external source to an electrical distribution panel mounted in the right rear interior corner of the shop (fig. 6). A safety disconnect switch is mounted below the electrical panel of the semitrailer in order that the power source may be disconnected from the interior of the shop. The electrical panel contains 14 thermal-magnetic circuit breakers for supplying power to the various circuits. The wiring diagram for shop set C2, is contained in figures 10 and 11.

46. Electrical Generator

Operator maintenance for the generator consists of service and adjustments. The detail maintenance procedures are outlined in the technical manual for the generator.

47. Electrical Wiring Installation

a. General. Operator maintenance of the electrical wiring installation consists of service and adjustments.

b. Servicing. Keep electrical power cords clean and free of grease and oil. Do not allow rubber covered power cords to come into contact with grease, oil, fuels, cleaning, solvents, or paint thinners. Store detachable electric power cords in space provided when not in use. Wipe foreign materials from electrical receptacles before use or when exposed to wind, dust, rain, snow, or salt water.

c. Adjustments. Check all male electrical connectors for security and condition before use. Adjust or tighten terminals as necessary.

Female electrical connectors and receptacles require few adjustments beyond the tightening of screws. Check all female electrical connectors and receptacles for security and condition before use.

Warning

Disconnect the power source at the safety disconnect switch prior to adjusting female electrical connectors or receptacles.

48. Switches and Circuit Breakers

Operator maintenance of switches and circuit breakers consists of inspection and servicing. Inspect for condition, security, and operation. Report deficiencies to second echelon maintenance for correction. Service switches and circuit breakers by cleaning with a dry wiping cloth.

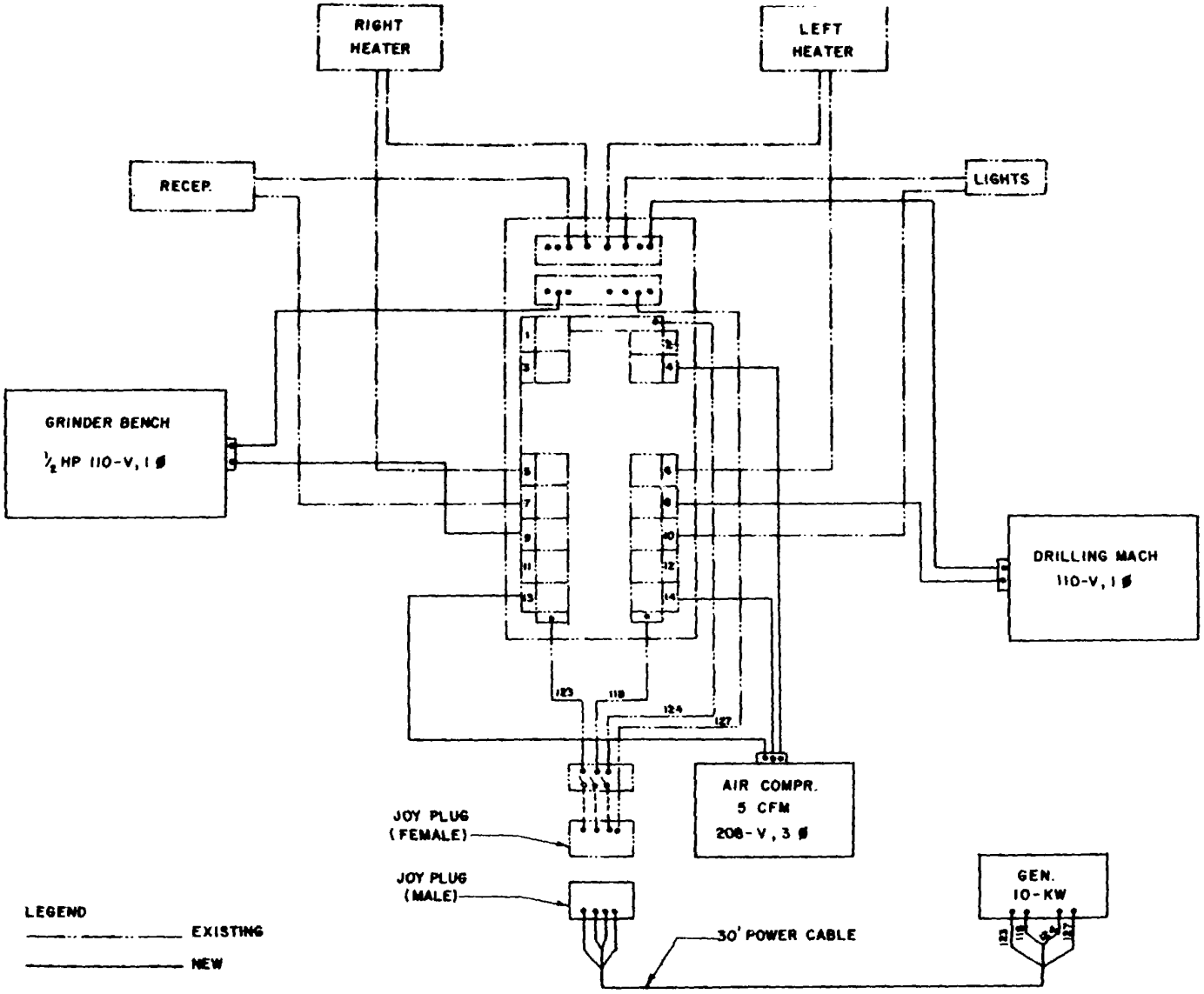


Figure 10. Wiring diagram, semitrailer mounted, Shop Set C-2.

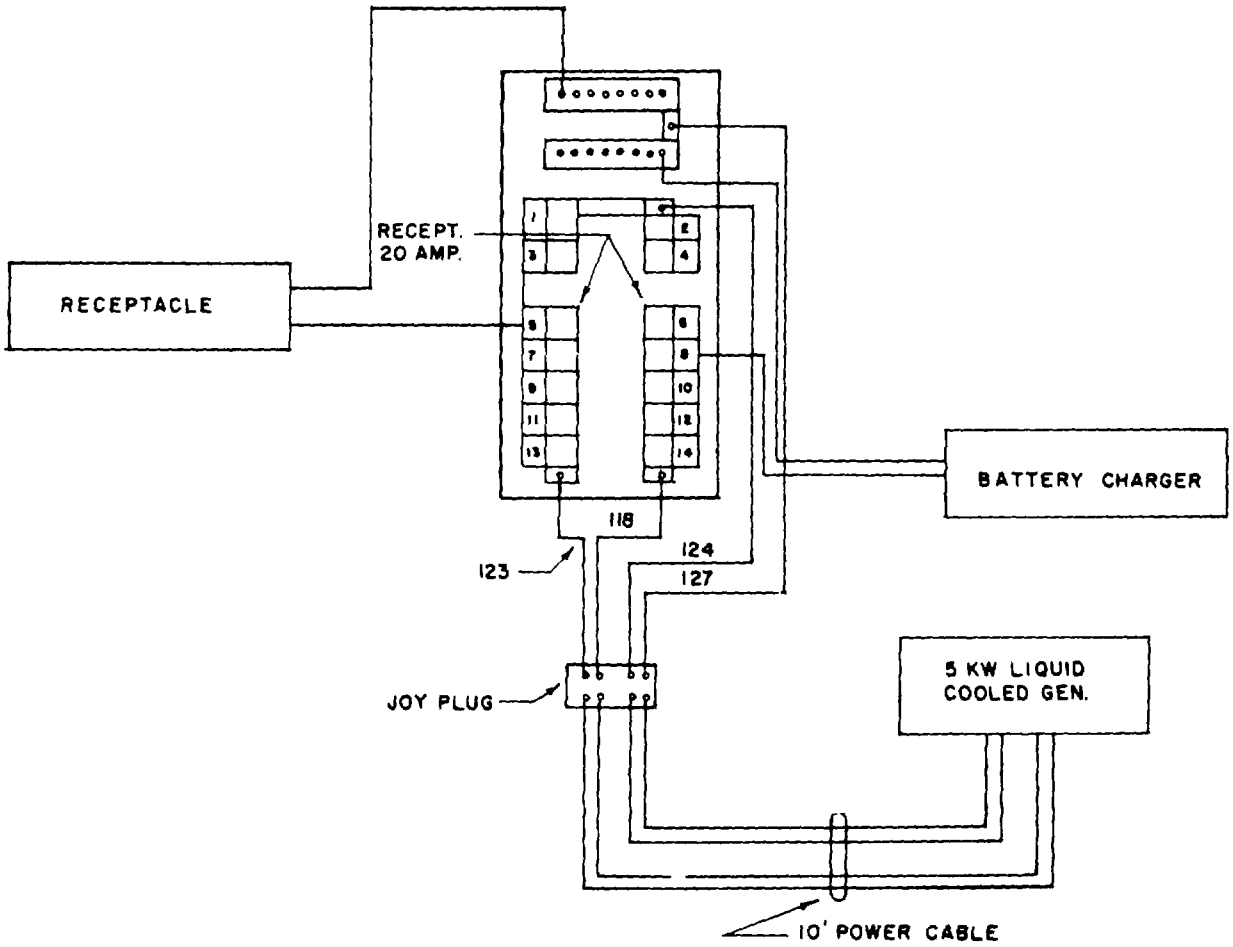


Figure 11. Wiring diagram, trailer mounted, Shop Set C-2.

Section VI. PNEUMATIC SYSTEM

49. General

The pneumatic system of Shop Set, Aircraft Maintenance, Semitrailer and Trailer Mounted, C-2, Electrical Shop, consists of an air compressor, electric motor driven and air supply tank, controls and instruments, lines, and connectors. Compressor, tank, controls and instruments, lines, and connectors are shown in figures 12 through 23. The compressor is mounted on the semitrailer shop set (fig. 19).

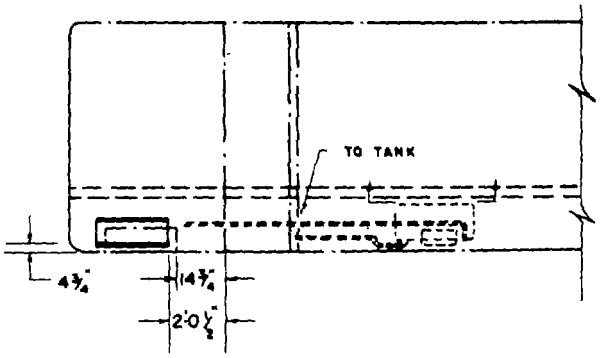


Figure 12. Pneumatic system installation, plan view.

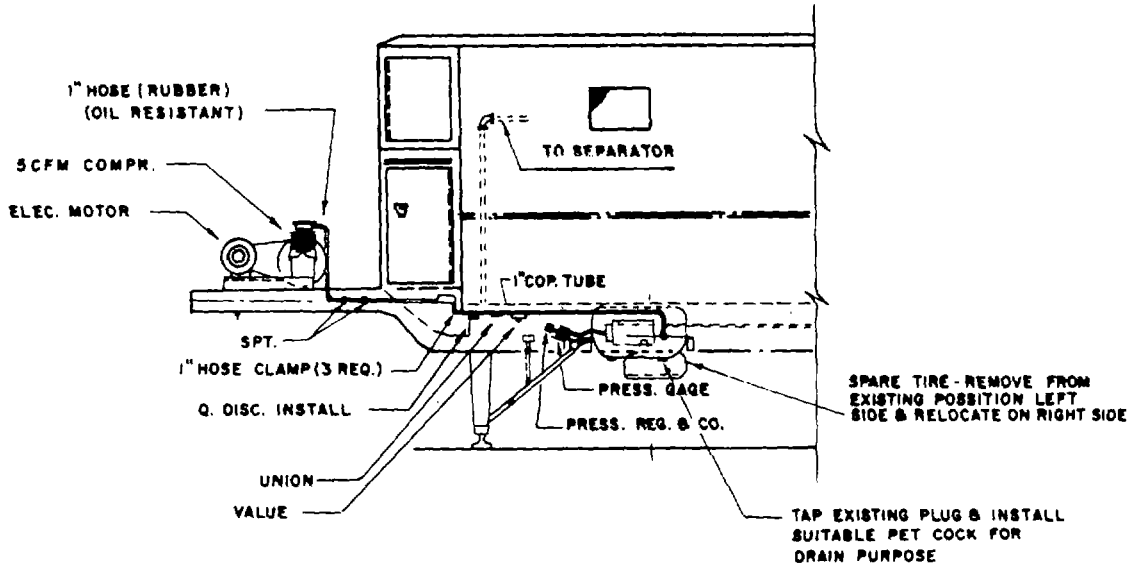


Figure 13. Left side elevation, pneumatic system.

50. Air Compressor

Operator maintenance of the compressor consists of service and adjustments. The technical manual for the compressor outlines detail maintenance procedures for the operator.

51. Air Supply Tank

The air supply tank is mounted underneath the shop floor at the forward left side of the shop (figs. 21 and 22). Operator maintenance consists of service and adjustments as outlined in the technical manual for the compressor.

52. Controls and Instruments

a. General. Controls and instruments for the pneumatic system (fig. 7), consist of pressure gages, oil, and water separator, regulators, and valves. The operator is responsible for service and adjustment of the controls and instruments.

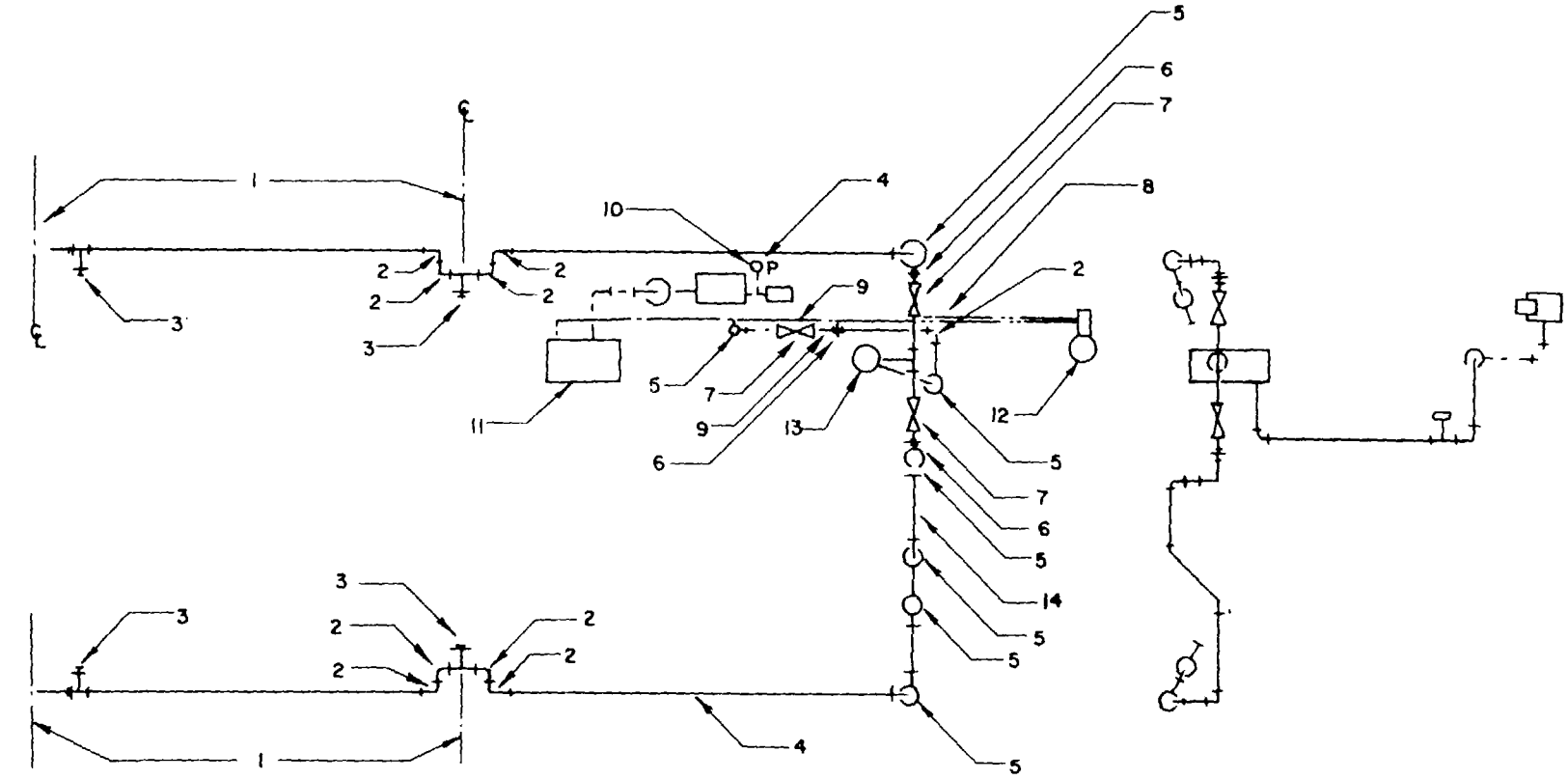
b. Servicing. Keep instrument dial covers and cases clean; avoid the use of oily, gritty, or dirty wiping material for cleaning dial covers and cases. Normally, plain water and a clean rag will suffice for cleaning dial covers and cases. When heavy accumulations of mud, dirt, grime, grease, or other foreign materials are to be removed from dial covers and cases, use a solution of water and a mild soap or detergent. Extreme cases may required the use of more active compounds for the removal of foreign materials. Wipe off all moisture after cleaning.

Caution

Use only approved cleaning compounds.

Follow the directions carefully when applying. Service the controls of the pneumatic system by removing oil, grit, grime, dirt, mud, grease, and other foreign materials before and after operation. Materials that are used in cleaning controls are the same as those used to clean instrument dials and cases.

c. Adjustments. Operator adjustment of instruments is accomplished by use of the controls provided. The operator should not attempt to make adjustments to any instrument except as can be made by use of the controls. Controls in the pneumatic system contain valves which are used to regulate the air pressure to the tank; to regulate the air pressure to the equipment being used and to drain the system of condensate. Refer to paragraphs 8 through 10 for location, description, and purpose of controls. To regulate the supply of air to the air tank, open or close regulator. as necessary. To adjust the supply of air to the equipment being used, turn regulator handle



LEGEND

ELL. 90°	T	1. VERTICAL POST	8. 1 IN. RUBBER HOSE
ELL. 45°	T. OUT. DN.	2. 1/4 IN. 90° GALV. STL. ELBOW	9. 1 IN. COPPER TUBING
ELL. TND. UN.	PL.	3. 1/4 IN. GALV. STL. TEE	10. PRESSURE GAGE
ELL. TND.	GLV.	4. 1/4 IN. GALV. STL. PIPE	11. COMPRESSOR TANK
ELL. UNION	ELL. ST. 90°	5. 1/4 IN. GALV. STL. ELBOW	12. COMPRESSOR
		6. 1/4 IN. GALV. STL. UNION	13. OIL AND WATER SEPARATOR
		7. 1/2 IN. COMB. GLOBE VALVE	14. 1/2 IN. GALV. STL. PIPE

Figure 14. Air line layout, top view.

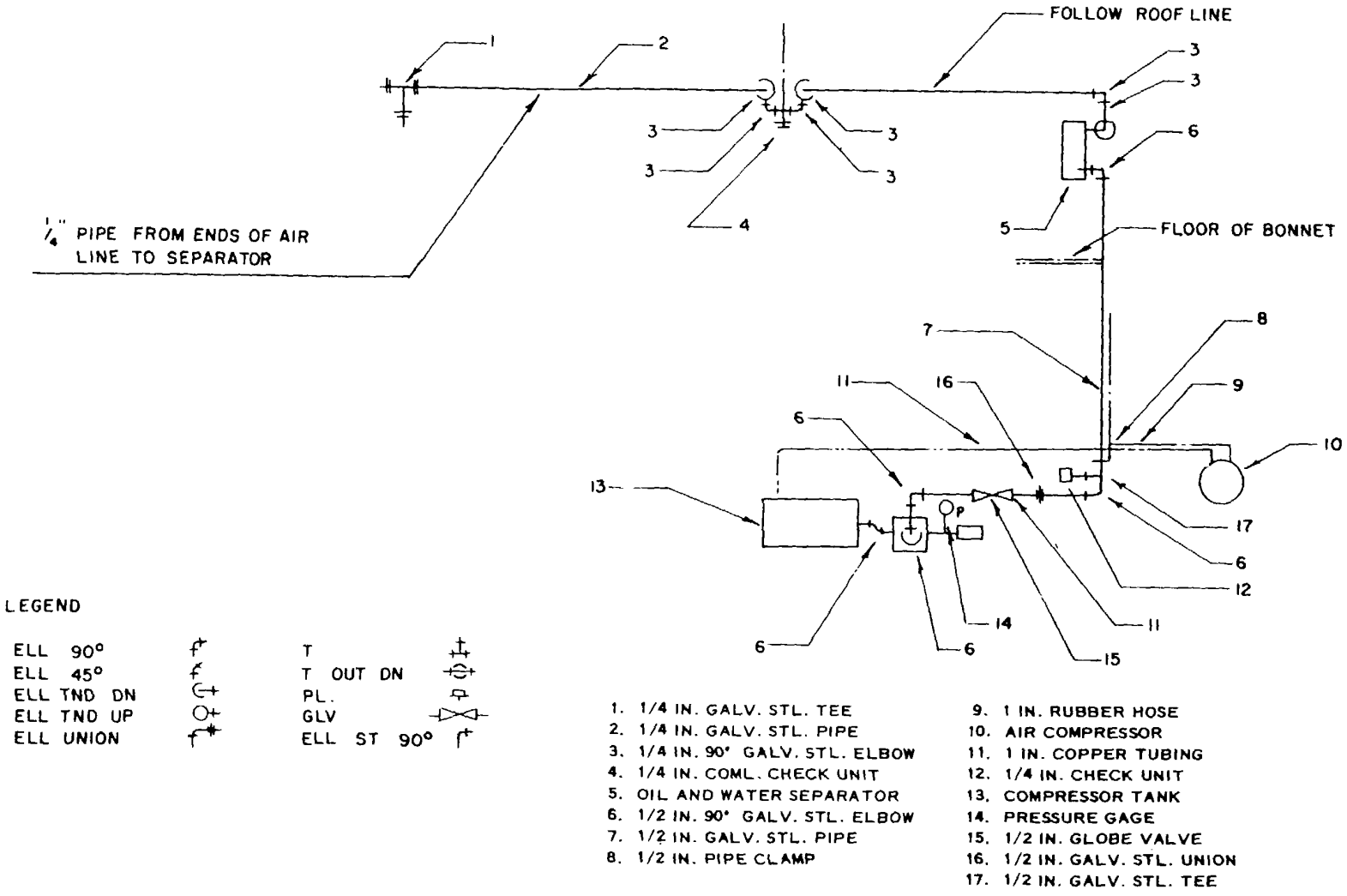


Figure 15. Air line layout, side view.

(fig. 7), in or out until an operating pressure (75 psi) is obtained.

53. Lines and Connectors

a. General. Operator maintenance of the air lines and connectors consist of service and adjustments.

b. Servicing. Keep air lines and connectors away from grease and oil. Remove foreign materials with approved cleaning compounds.

Warning

Use compressed air only for the purpose for which it is intended. Serious injury can result from misuse.

Report all leaks, breakage, or damage of air lines to second echelon maintenance for correction.

Note

Checks for leaks, breakage, and damage should be made before air powered equipment is put in use.

c. Adjustments. Adjustments of lines and connectors (figs. 14 and 15), by the operator consist essentially of adjusting adapters, or quick disconnect fittings, to obtain a more positive seal to prevent loss of compressed air. made by hand and no special tools or equipment are required.

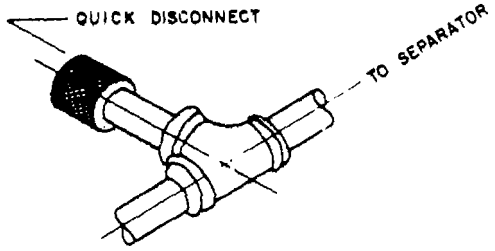


Figure 16. Quick disconnect fitting, compressor tank.

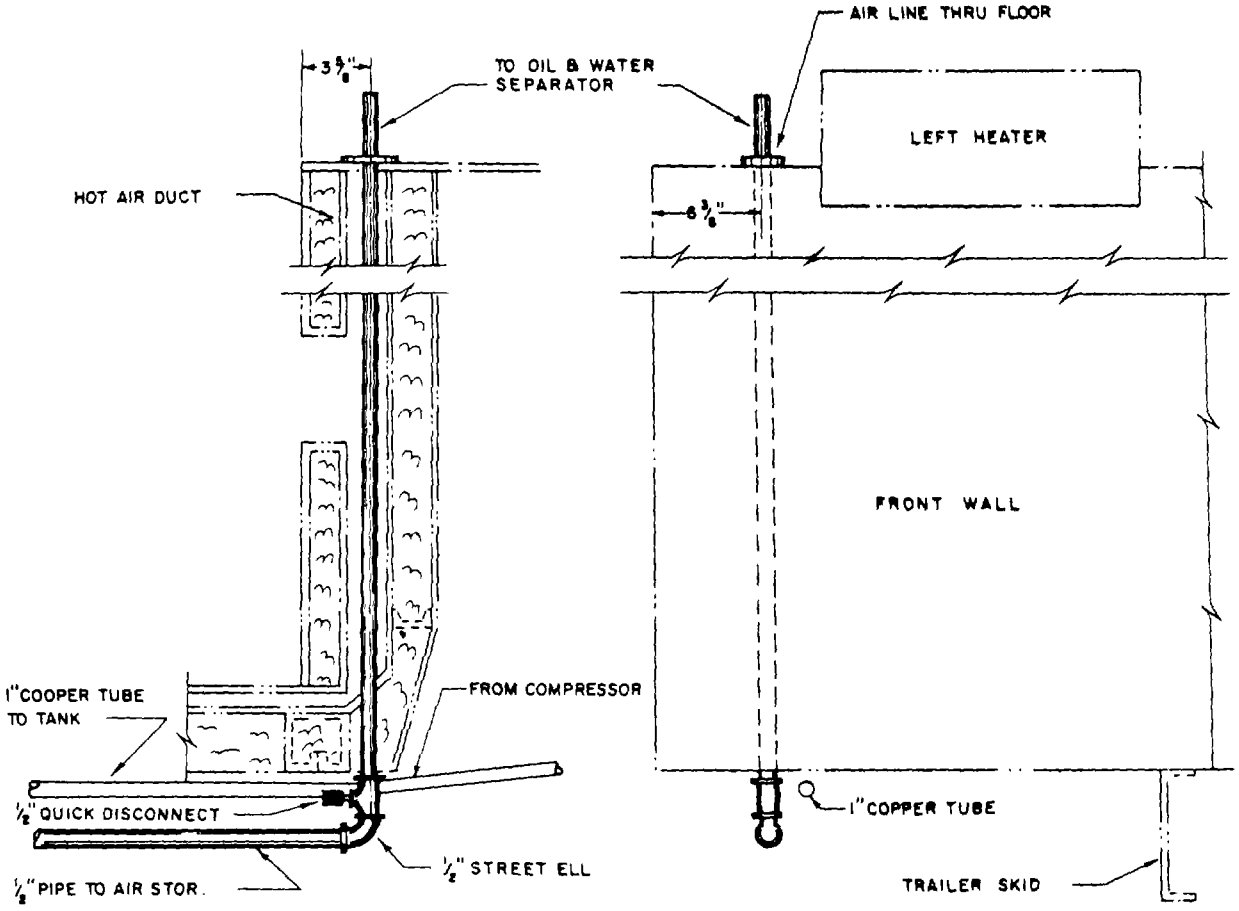


Figure 17. Air line layout, front view.

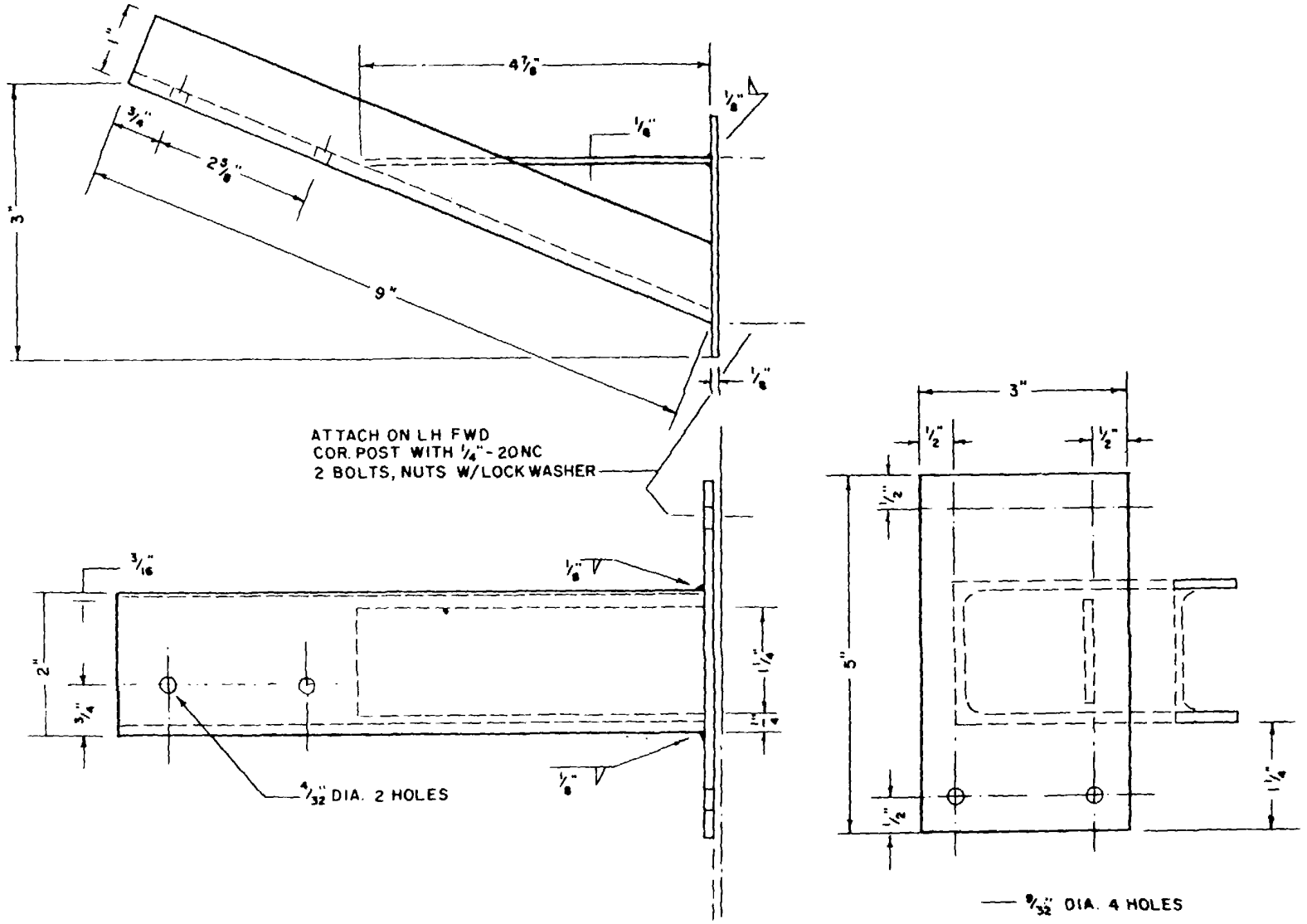


Figure 18. Separator mounting bracket.

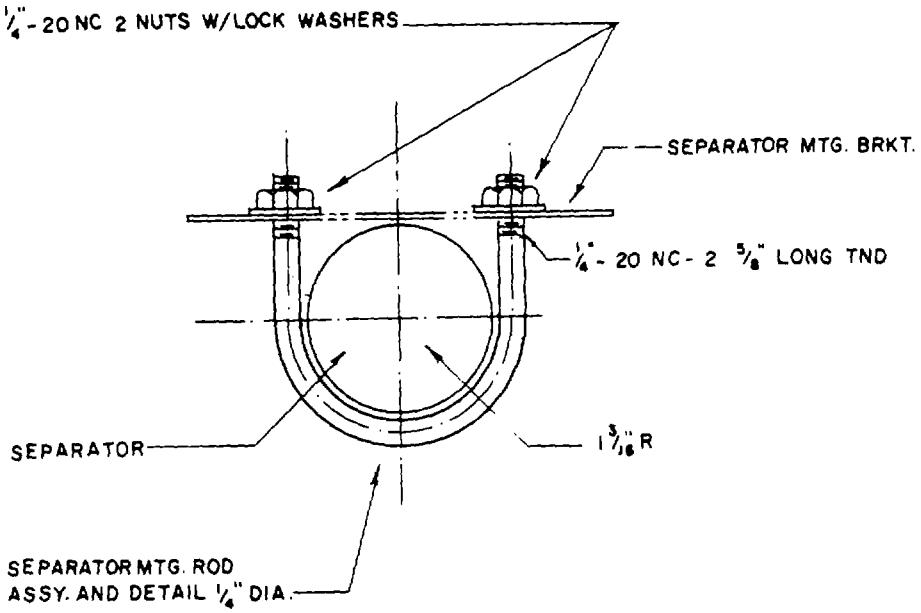


Figure 19. Separator mounting rod.

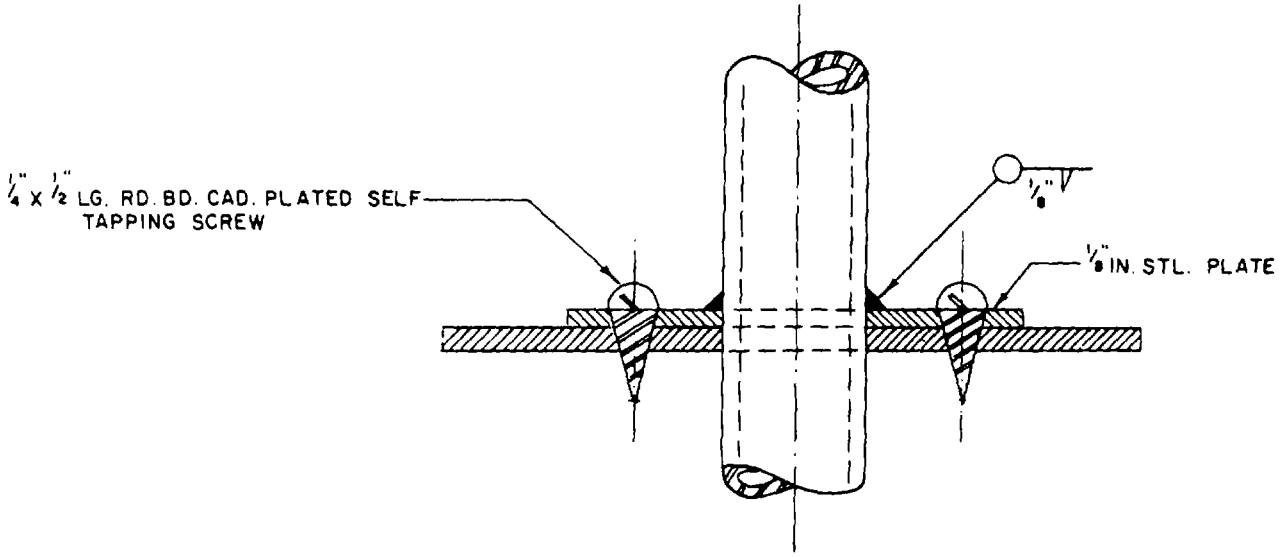


Figure 20. Air line Mounting, floor.

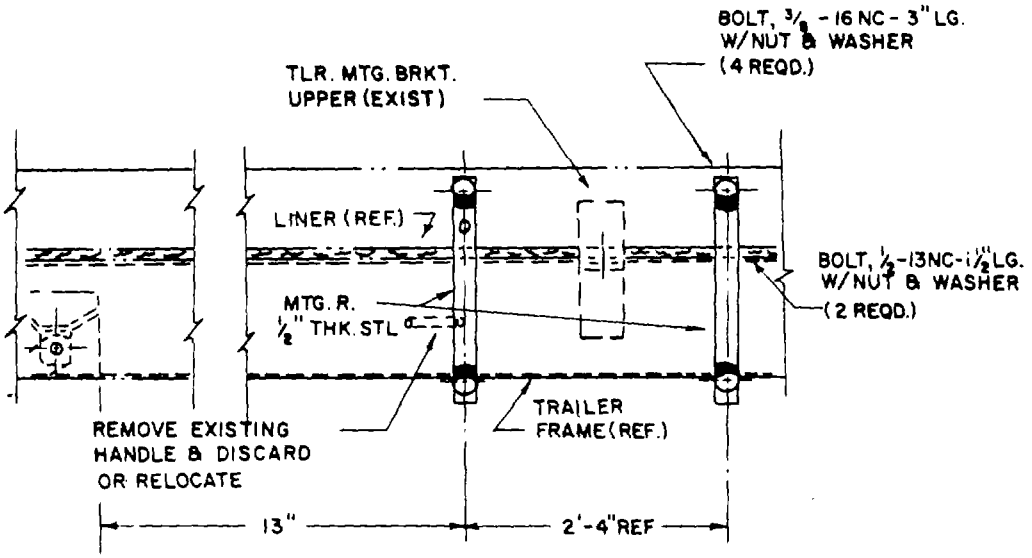


Figure 21. Air compressor Tank installation, top view.

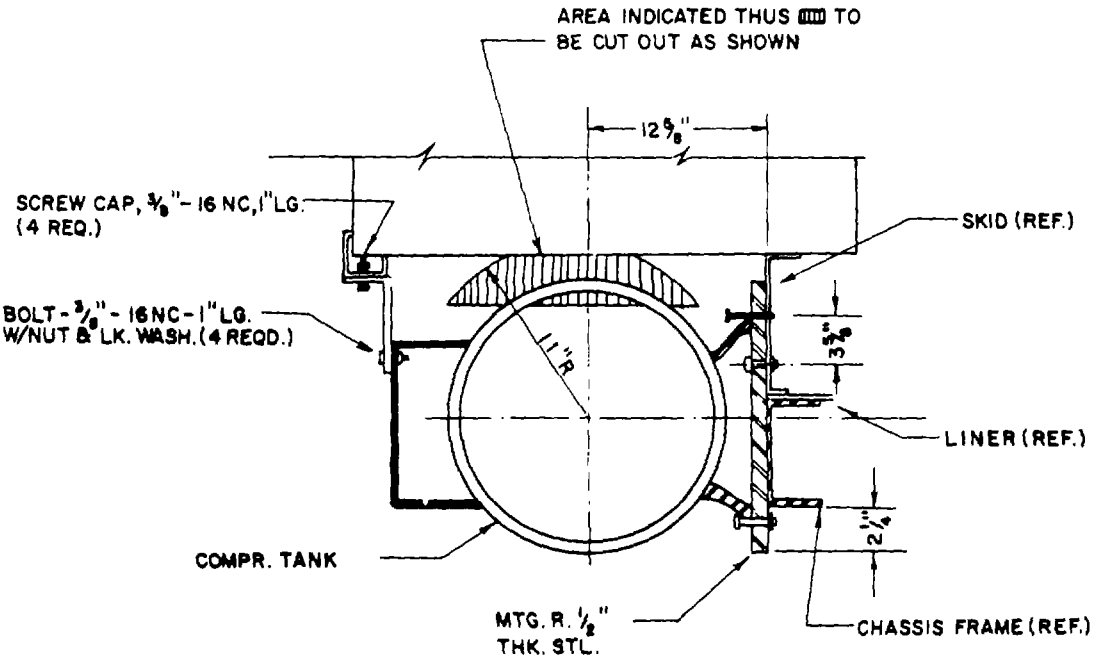


Figure 22. Air compressor tank installation, end view.

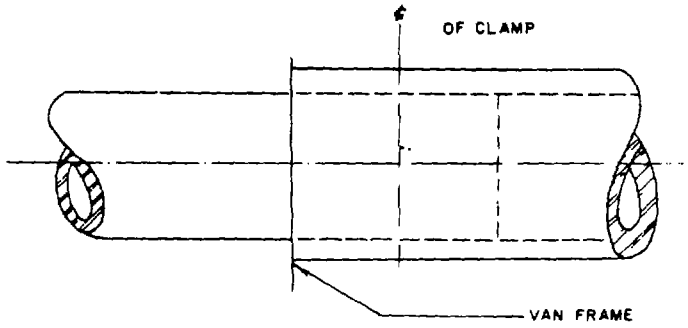


Figure 23. Pipe to hose connection: compressor to tank.

Section VII. UTILITY SYSTEM

54. General

The utility system of Shop Set, Aircraft Maintenance, Semitrailer and Trailer Mounted, C-2, Electrical Shop, consist of storage cabinets and bench tops. Layout of the utility system and the shop set is shown in figures 24 through 27.

55. Storage Cabinets

Operator maintenance of the storage cabinets, is limited to service and adjustments. Service will consist of cleaning, lubrication, and other preventive maintenance services (pars. 31 through 34). Use a solution of water and mild soap or detergent for cleaning purposes under usual operating conditions. Cleaning under unusual operating conditions (pars. 18 through 26), may require more active cleaning agents such as cleaning solvents. Care should be exercised in application and use of cleaning solvent so as not to dam-age the finish of the cabinets. Lubricate the cabinets at hinge points, on sliding surfaces, and at points of closing. Use a good grade of light lubricating oil; do not use more lubricant than is required to maintain normal operating conditions; wipe off excess lubricants with a clean, dry cloth. Adjustment of cabinets may be accomplished by the operator when disassembly is not required; generally this will consist of alining hinges, slides, locking bars, and closing points.

Note. **Adjustments should be made only when the operating efficiency of the cabinet will be impaired unless the misalignment is corrected.**

56. Bench Tops

Operator maintenance of bench tops consists of cleaning and the application of wax or similar preservative. Foreign materials should be wiped from benches with a soft brush whenever there is an accumulation that could mar the surface. Stains, such as marking fluid, grease, oil, or ink, may be removed by washing the bench top with a solution of mild soap and water. Wipe the surface with a clean cloth to remove moisture after cleaning is completed. Apply wax or similar preservative when cleaning is of such severe nature as to remove protective coating, or when the protective coating is marred by scratches, nicks, gouges, or exposure to the elements.

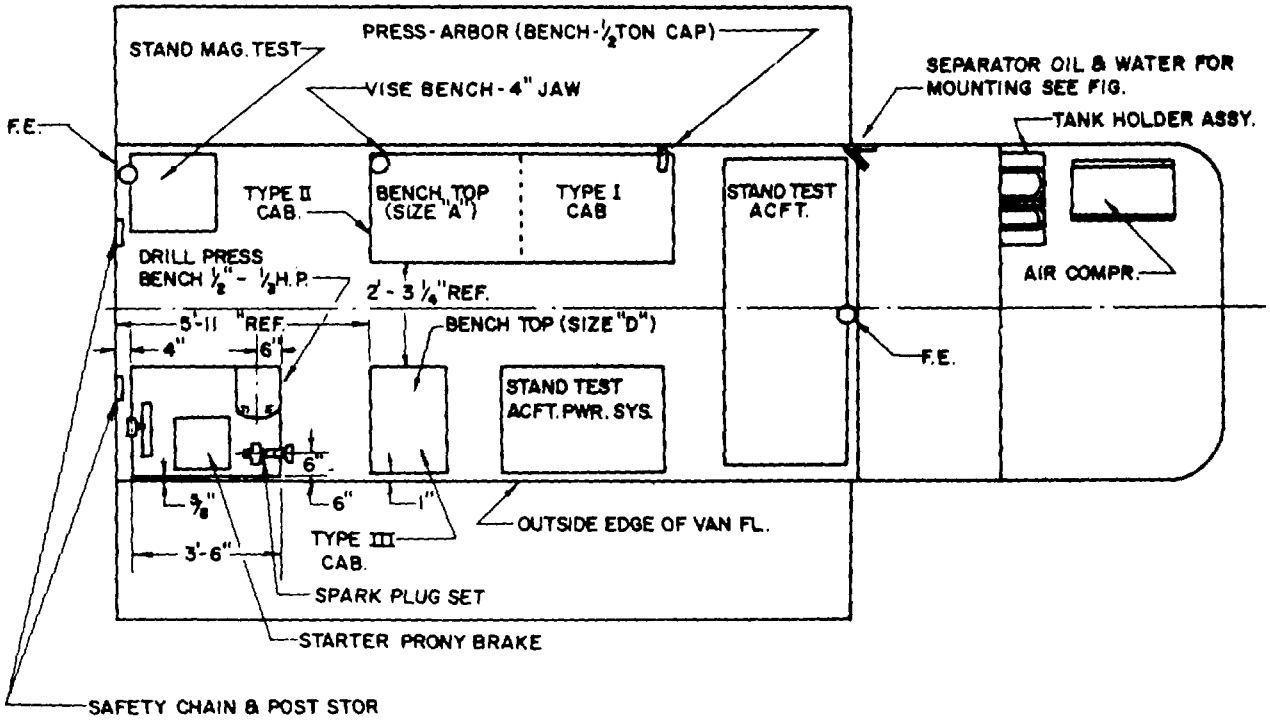


Figure 24. Floor plan, semitrailer mounted, Shop Set, C-2, top view.

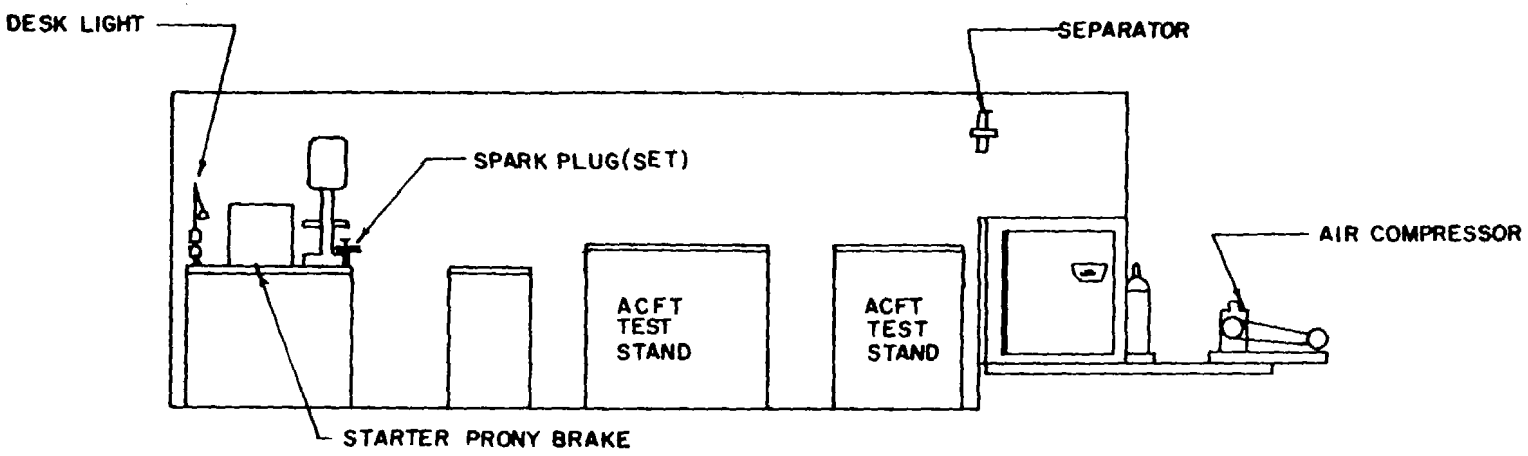


Figure 25. Floor plan, semitrailer mounted Shop Set C-2, right side view.

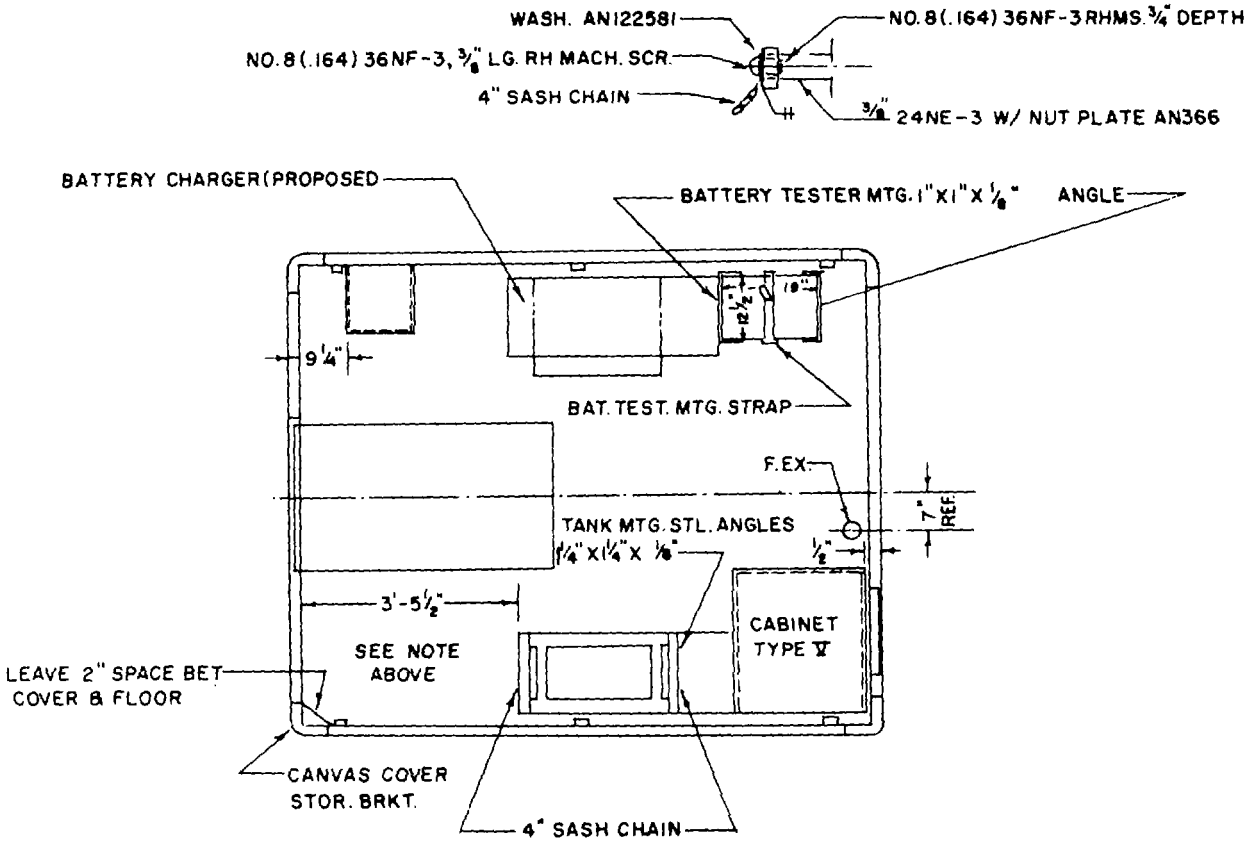


Figure 26. Floor plan trailer mounted Shop Set C-2, top view.

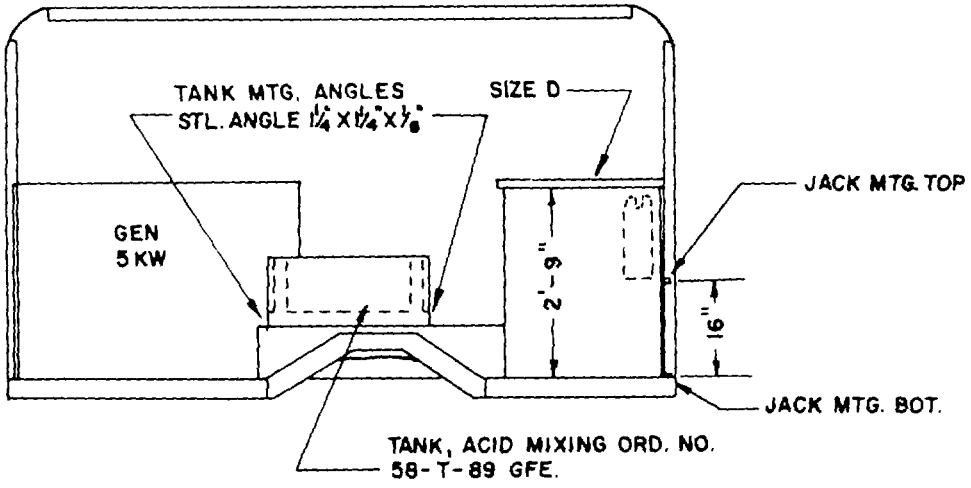


Figure 27. Floor plan, trailer mounted Shop Set C-2, Left side view.

CHAPTER 4

SHIPMENT AND LIMITED STORAGE AND DEMOLITION TO PREVENT ENEMY USE (OPERATOR)

Section I. GENERAL

57. Purpose

This chapter furnishes the operator with sufficient information for preparation of the equipment comprising Shop Set, Aircraft Maintenance, Semitrailer and Trailer, C-2, Electrical Shop, for limited storage and shipment. Instructions are also included for demolition of the shop set to prevent enemy use.

58. Methods

The methods outlined herein for shipment and limited storage apply to the shop set as a unit. It is the responsibility of the operator to become familiar with the technical manuals for each item of equipment in order to adequately prepare the item of equipment for shipment and limited storage. The method outlined for demolition of equipment to prevent enemy use are intended as guide for the operator.

Section II. SHIPMENT AND LIMITED STORAGE

59. Shipment

The operator is responsible for the initial steps in preparing Shop Set, Aircraft Maintenance. Semitrailer and Trailer Mounted, C-2, Electrical Shop for shipment. These responsibilities consist of the following steps.

a. Perform "at halt" and "before operations" daily services (table I).

b. Place tools and equipment in storage bins or drawers provided.

c. Install locking bars in cabinet drawers (fig. 8).

d. Secure equipment in open bins with web straps or special fastenings (figs. 8 and 9)

e. Secure mounted tools with special fasteners (figs. 24-27).

f. Store cables and hose in storage. boxes.

60. Limited Storage

a. General. A shop set which is temporarily not in use will be placed in limited storage (not to exceed 6 months), when authorized by major commanders or heads of Department of the Army agencies. The responsibility for Transportation Corps mechanical equipment stored under such authorization will remain with the organization or activity to which issued. Equipment no longer required for accomplishment of the assigned mission will be returned to stock. When the shop set is placed in limited storage it will be preserved as specified. Equipment will not be blocked up and will be so spaced, where practicable, to provide independent access to each item.

***Note*. When equipment is to be stored for 30 days or less, clean and oil with light lubricating oil, Federal Specification VV-0-526.**

b. Operator Responsibility. The operator of the equipment is responsible for certain phases of preparation for limited storage; normally, these responsibilities will coincide with those listed in paragraphs 6 and 7 and paragraphs 59 and 60. Technical manuals for individual items of equipment, provide the operator with the necessary information required to accomplish limited storage of the equipment.

Section III. DEMOLITION TO PREVENT ENEMY USE

61. General

a. Destruction of the shop set when subject to capture or abandonment in a combat zone will be undertaken by the operator only when, in the judgment of the unit commander concerned, such action is necessary in accordance with orders of, or policy established by the Army Commander.

b. The information which follows is for guidance only. Certain of the procedures outlined require the use of explosives and incendiary grenades which normally may not be authorized items for the using organization. The issue of these and related materials, and the condition under which destruction will be effected, are command decisions in each case, according to the tactical situation. Of the several means of destruction, those most generally applicable are-

(1) *Mechanical*. Requires ax, pick mattock, crowbar, or similar implement.

(2) *Burning*. Requires gasoline, oil, incendiary grenades, or other flammables.

(3) *Destruction by use of explosives.* Requires suitable explosives or ammunition.

(4) *Gunfire.* Includes artillery, machine guns, rifles using rifle grenades, and launchers using antitank rockets. Under some circumstances, hand grenades may be used.

c. In general, destruction of essential parts, followed by burning will usually be sufficient to render the shop set useless. However, selection of the particular method of destruction requires imagination and resourcefulness in the utilization of the facilities at hand under the existing conditions. Time is usually critical.

d. If destruction to prevent enemy use is resorted to, the shop set must be so badly damaged that it cannot be restored to a usable condition in the combat zone either by repair or by cannibalization. Adequate destruction requires that all parts essential to the operation of the material, including essential spare parts, be destroyed or damaged beyond repair. However, when lack of time and personnel prevents destruction of all parts, priority is given to the destruction of those parts most difficult to replace. Equally important, the same essential. parts must be destroyed on all like material so that the enemy cannot construct one complete unit from several damaged ones.

e. If destruction is directed, due consideration should be given to (1) and (2) below.

(1) Selection of a point of destruction that will cause greatest obstruction to enemy movement and also prevent hazard to friendly troops from fragments or ricocheting projectiles which may occur incidental to the destruction.

(2) Observance of appropriate safety precautions.

62. Destruction by Burning

a. Remove and empty portable fire extinguishers.

b. Using an ax, pick mattock, sledge, or other heavy implement, smash all vital elements.

c. Puncture fuel tanks as near the bottom as possible, collecting gasoline for use as outlined in *d* below.

d. Pour gasoline and oil in and over the entire equipment; ignite by using a gasoline soaked rope for a fuse. If gasoline and oil are not available, use incendiary grenades. Take cover.

***Warning*: Due consideration should be given to the highly flammable nature of gasoline and its vapor. Carelessness in its use may result in painful burns.**

63. Destruction by Use of Explosives

a. Remove and empty portable fire extinguishers.

b. Prepare 6 charges (1 charge = 2 ea. lb. blocks) of EXPLOSIVE, TNT. Place charges as in (1), (2), (3), and (4) below.

(1) Place 1 charge of explosive on the front of the semitrailer shop on the platform forward of the storage compartment.

(2) Place 1 charge of explosive between the axles of the semitrailer shop, at the approximate midpoint of the axles.

(3) Place 1 charge of explosive on the semitrailer shop floor at the approximate center width of the shop and approximately 4 ft. from forward wall: Place 1 charge at the approximate center of the trailer floor, 2 feet from forward wall.

(4) Place 1 charge of explosive on the shop floor of the semitrailer at the approximate center width of the shop and approximately 6 feet from the rear wall. Place one charge at the approximate center width of the trailer floor, 4 feet from rear wall.

(5) Connect the 6 charges for simultaneous detonation with detonating cord. Provide for dual priming to minimize the possibility of a misfire. For priming, either a nonelectric blasting cap, crimped to at least 5 feet of safety fuse, (safety fuse burns at the rate of 1 ft in 30 to 45 seconds; test before using), or an electric blasting cap and detonating cord may be used. If a nonelectric blasting cap and safety fuse are used, the fuse should be sufficiently long and so .positioned that it may be ignited from outside the shop set. Safety fuse, which contains black powder, and nonelectric blasting caps must be protected from moisture at all times. The safety fuse may be ignited by a fuse lighter or a match; the electric blasting cap requires a blasting machine or equivalent source of electricity.

***Warning*: Keep the blasting caps, detonating cord, and safety fuse separated from the charges until required for use.**

c. Detonate the charges. If primed with nonelectric blasting cap and safety fuse, ignite and take cover. If primed with electric blasting cap, take cover before firing the charges.

***Warning*: The danger zone is approximately 250 yards; take cover without delay as an early explosion may result from incendiary fires.**

64. Destruction by Gunfire

a. Remove and empty portable fire extinguishers.

b. Destroy the shop set by gunfire using artillery, machine guns, rifles using rifle grenades, or launchers using antitank rockets. Although one well placed direct hit may render the shop set temporarily useless, several hits are usually required for complete destruction unless an intense fire is started, in which case the shop set may be considered destroyed.

***Warning*: Firing artillery at ranges of 500 yards or less should be from cover; firing rifle grenades or antitank rockets should be from cover.**

CHAPTER 5

OPERATING INSTRUCTIONS (SECOND ECHELON)

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

65. General

Shop sets, when received, are to be unloaded, uncrated, depreserved, and inspected by second echelon maintenance personnel.

66. Unloading and Uncrating New Equipment

a. Unloading. Remove shoring, blocks, tiedowns, and chocks before unloading equipment.

***Warning*: Remove nails and loose strapping from unloading area.**

***Caution*: Lift only at hoisting points provided when equipment is to be unloaded from heights above ground level (TM 9-2330-238-12). Do not allow equipment to be dropped while unloading.**

b. Uncrating. Unpack crated equipment as close as possible to the point of use; remove nails, straps, and OVM from equipment. Place equipment in position for use.

67. Depreservation

a. Observe all warning tags and instructional guides attached to the equipment.

b. Remove preservatives from exterior surfaces with solvent, Federal Specification P-S-661.

c. Preservatives applied to interior surfaces need not be removed except for draining.

d. Examine equipment carefully to detect and remove tape, barrier material, and other packaging materials which may be placed over breathers, vents, and other openings. Particular attention should be given to detection and removal of paper between or under brushes of large electrical motors.

e. Components which are packed separately from the equipment will be installed as instructed in paragraphs 135 through 140.

68. Inspection

Inspect all equipment for condition, correctness of assembly, security, and wear (pars. 31 through 34).

Section II. CONTROLS AND INSTRUMENTS

69. General

This section describes, locates, illustrates, and furnishes second echelon maintenance personnel with sufficient information pertaining to the various controls and instruments provided for operation of the equipment.

70. Electrical Controls and Instruments

These controls and instruments are provided to supply, regulate, and distribute the electrical power required to operate the shop. Detailed description, location, and illustrations are contained in paragraphs 8 through 10 and paragraphs 45 through 48.

71. Pneumatic Controls and Instruments

Pneumatic controls and instruments regulate and distribute the compressed air required to operate the pneumatic equipment of the shop. Refer to paragraphs 8 through 10 and paragraphs 45 through 48 for detailed description, location, and illustration of pneumatic controls and instruments.

Section III. OPERATION UNDER USUAL CONDITIONS

72. General

Instructions in this section are published for the information and guidance of second echelon maintenance personnel, responsible for the operation of this equipment. It is essential that the operator know how to perform every operation the equipment is capable of performing.

73. Preparations for Use of Equipment

a. Exterior.

(1) Install ground stake (fig. 28) located in compartment below rear doors of semitrailer by fastening cable to bolt provided with wing nut on the left rear skid. Install suitable ground stake for trailer.

(2) Position chocks.

(3) Install the stabilizing jacks (fig. 29) and adjust them as necessary.

(4) Remove entrance ladders from rear doors and position as shown in figure 30 (Semitrailer).

(5) Open right rear door (fig. 30).

(6) Remove aluminum ladder from inside right rear door of trailer and position in receptacles provided.

Figure 28. Installation of ground stake, semitrailer.

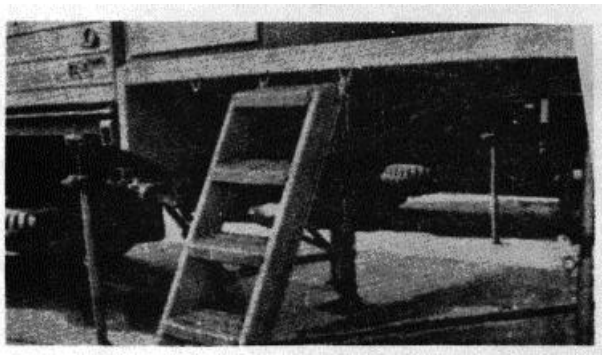


Figure 29. Installation and adjustment of stabilizing jacks, positioning front ladder semitrailer.

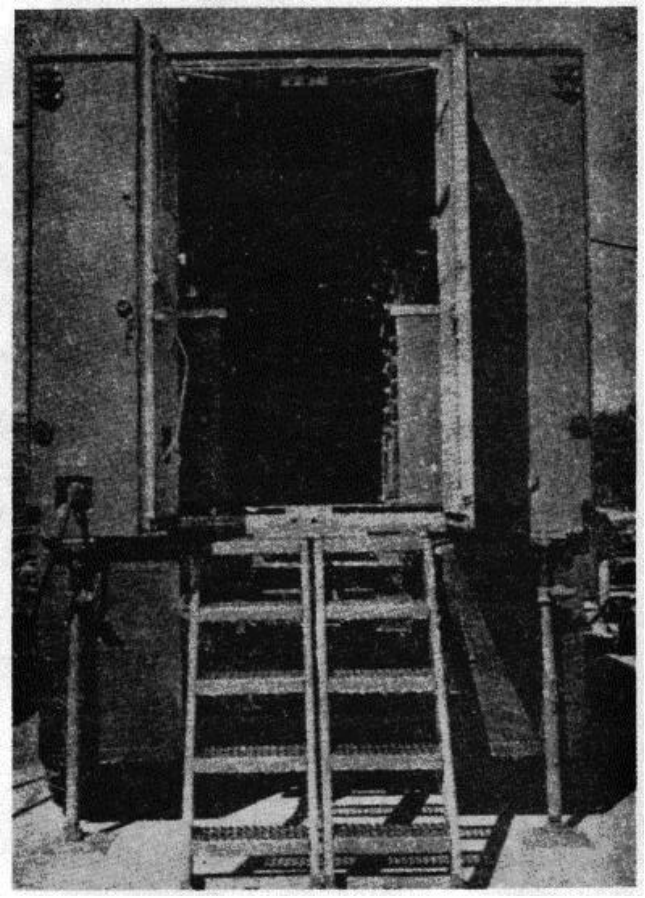


Figure 30. Positioning rear entrance ladders and opening rear doors, semitrailer.

b. Opening of Van. All van sides open from inside the van (figs. 31-33 and TM 9-2330-238-14).

(1) Release over-center clamps, front and rear, at top of each door on semitrailer.

(2) Release locks on center post of semitrailer, two on each side (fig. 31, and TM 9-2330-238-14). Release 2 locks on outside of trailer and assist doors to horizontal plane.

(3) Push top and bottom doors outward at the same time.

***Caution*: Do not let doors fall free, assistance from outside is necessary.**

(4) Install chain guard railing (fig. 34 and TM 9-2330-238-14).

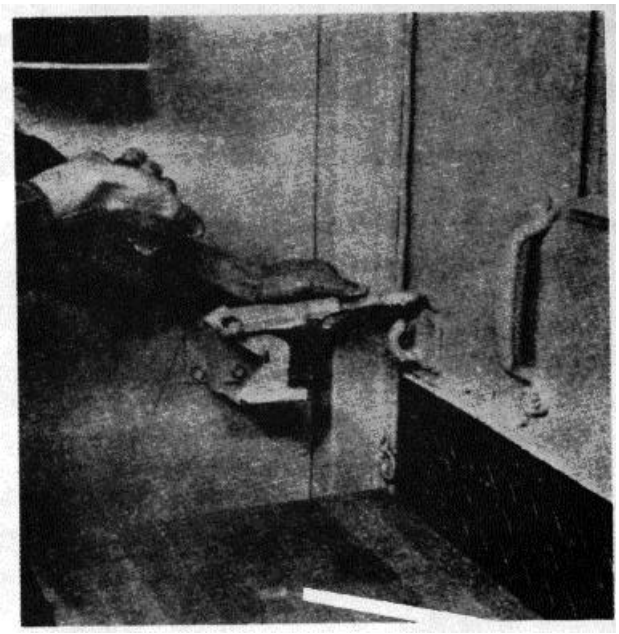


Figure 31. Opening folding shop sides, semitrailer, step I.

74. Shutdown of Shop Set

a. Shutdown instructions for the units comprising Shop Set, Aircraft Maintenance, Semitrailer and Trailer Mounted, C-2, Electrical Shop are contained in the technical manuals issued for the individual items. It is essential that the operator understand these instructions.

b. Disconnect external power source.

c. Close van sides and rear doors (figs. 1 and 2 TM 9-2330-238-14)

d. Remove and store entrance ladders (fig. 1 and 2 and TM 9-2330-238-14).

e. Check security of chocks.

75. Operating Details

a. General. These instructions provide second echelon maintenance personnel with the necessary details for operation of the equipment comprising the shop set.

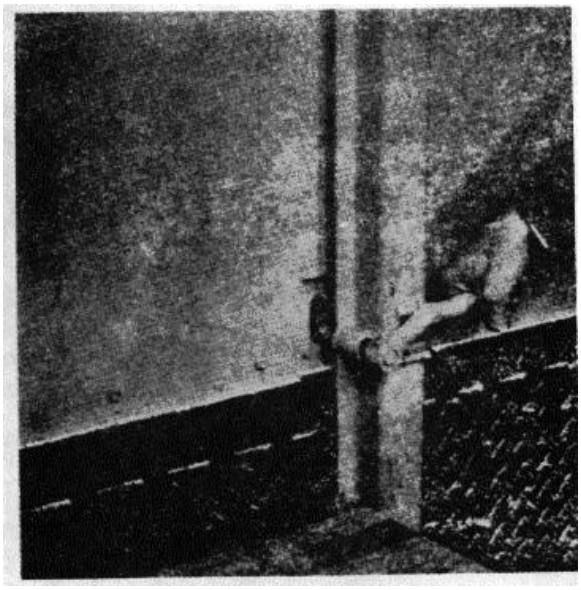


Figure 32. Opening folding shop sides, semitrailer, step II.

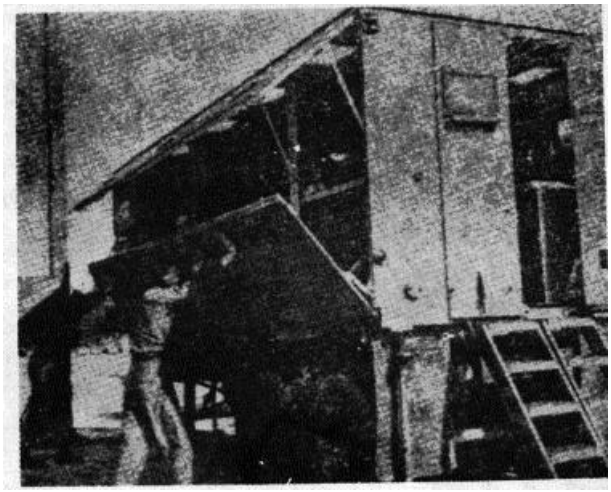


Figure 33. Opening folding shop sides, semitrailer, step III.

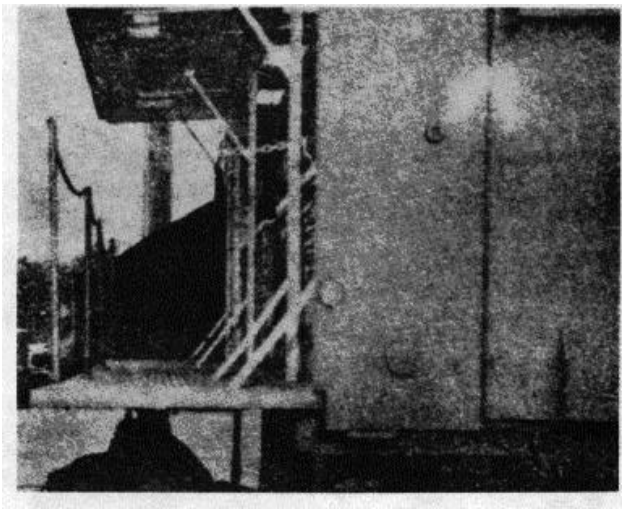


Figure 34. Chain guard railing installed, semitrailer.

b. Electrical System-Generator Operated.

(1) Remove power cords from jack stowage box.

(2) Inspect cord for breaks, security of connectors, and frayed cover material.

(3) Install power cord from generator to external power receptacle.

(4) Check operation of generator; refer to generator technical manual for procedure and details of operation.

c. Electrical System-Auxiliary Power Operated.

(1) Inspect auxiliary power cord for breaks, security of connectors, and frayed cover material.

(2) Install auxiliary power cord from auxiliary power source to external power receptacle.

d. Pneumatic System-Compressor Operated (Semitrailer).

(1) Inspect lines, connectors, and fittings for security and condition.

(2) Check operation of air compressor; refer to compressor technical manual operation.

(3) With compressor running, inspect lines, connectors, fittings, controls, and instruments for leaks, security, and proper operation.

e. Pneumatic System-Auxiliary Power Operated, (Semitrailer).

(1) Inspect lines, fittings, and connectors for leaks and security.

(2) Install line from auxiliary to air supply tank (fig. 16).

(3) With auxiliary air supply connected, controls, and instruments for leaks, inspect lines, connections, fittings, security, and proper operation.

76. Movement of Equipment

a. Open van in accordance with instructions contained in paragraph 73.

b. Close van sides and rear doors (fig. 1).

c. Remove and stow entrance ladders (fig. 1).

***Caution*: This operation must be performed before attaching tractor to trailer or semi-trailer.**

d. Disconnect external power source, electrical or pneumatic.

e. Remove and stow bonding stakes.

f. Remove chocks and secure in "travel" position.

Section IV. OPERATION OF ONE UNIT IN CONJUNCTION WITH ANOTHER ACCESSORY OR AUXILIARY

77. General

Auxiliary equipment may be operated in conjunction with Shop Set, Aircraft Maintenance, Semitrailer and Trailer Mounted, C-2, Electrical Shop, by use of an external power receptacle for electrical connections and by use of an adapter installed on the air supply tank for pneumatic connections.

78. External Power Receptacle

The external power receptacle is mounted at the right rear of the semitrailer and the trailer. When the shop generator is not operating, a power cord may be connected to the external power receptacle and the female connector of the power cord connected with an auxiliary power source.

79. Air Supply Tank Adapter

The adapter connection used to transfer compressed air to an auxiliary shop is located at the front of air supply tank and is used to connect a hose from the tank to the auxiliary shop mounted in the semitrailer.

***Note*. This adapter is the same that is used to receive an external power source; therefore it is usable only when the compressor is being operated.**

Section V. OPERATION UNDER UNUSUAL CONDITIONS

80. General

This section contains information pertinent to second echelon maintenance operation of Shop Set, Aircraft Maintenance, Semitrailer and Trailer Mounted, C-2, Electrical Shop, under unusual conditions. Refer to paragraphs 18 through 26 for additional information. Report recurrent failure of equipment resulting from operation under unusual conditions on DA Form 468.

81. Removable Canvas Side Wall, Semitrailer

The removable canvas side wall has four sections. The side walls are fastened at the top with snap-type fasteners. The bottoms are attached with web belting, incorporating quick releases and belt-tightening features. The bottom edges also have 1/2-inch grommets so rope may be used in lieu of the web straps when needed. Attached to the bottom side door are cleats for use with either web strapping or rope (fig. 35).

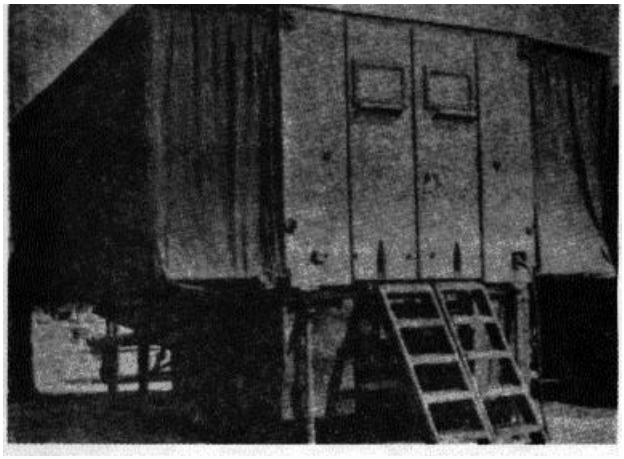


Figure 35. Canvas side walls installation, semitrailer.

***Caution*: Canvas should not be stored when wet.**

82, Extreme Cold Weather Conditions

Special equipment is provided for the protection of equipment in extreme cold weather conditions (below 0°F.). Individual items of equipment should be protected in accordance with the technical manual for the item. Refer to TM 9-2330-238-14 for specific information concerning the vans which house the shop.

83. Extreme Hot Weather Conditions

Frequent inspections of bearings, cooling systems, and lubricants should be accomplished in extreme hot weather to insure proper operation of the equipment. Refer to paragraphs 18 through 26 for additional instructions regarding operation of equipment in extreme hot weather conditions.

84. Operation in Extreme Wet Climate

Inspect bearings and other lubricated surfaces for possible washing away of lubricants. These inspections should be made prior to stating and at halt of equipment. Additional precautionary instructions for operation in extreme wet climate are listed in paragraphs 18 through 26.

85. Operation in Salt Water Areas

Wash exterior of shop with fresh water to remove salt water residue. Accomplish salt water residue removal as often as is necessary to keep equipment clean and to combat corrosion. Treat unprotected surfaces of tools and equipment which are in contact with salt water as instructed in paragraph 24.

86. Operation in Extreme Dust Conditions

Inspect machined surfaces, bearings, and lubricated surfaces for dust accumulations. Clean bearings and surfaces as instructed in paragraphs 29 through 34.

87. Operation at High Altitudes

Inspect intake ducts, filters, cooling systems, and pneumatic equipment at frequent intervals to insure proper operation at high altitudes. Observe precautions listed in paragraphs 29 and 30 and in the technical manual for the item of equipment.

CHAPTER 6

MAINTENANCE INSTRUCTIONS (SECOND ECHELON)

Section I. SPECIAL ORGANIZATIONAL TOOLS AND EQUIPMENT

88. General

No special tools or equipment are required by second echelon maintenance personnel to maintain the shop as a unit. Any special tools or equipment required for maintenance of individual items of equipment are listed in the technical manual for the item.

89. Parts

Parts required by second echelon maintenance personnel for maintenance of the shop are listed in chapters 8 and 9.

Section II. LUBRICATION

90. General

This section provides second echelon maintenance personnel with lubricating instructions for the shop. Lubrication orders, listing lubricants by type required for each application, are prepared for each item of equipment and are contained in the technical manual for the item.

91. Special Lubrication Instructions

Refer to paragraphs 6 and 7, 29 through 34, 72 through 76 and 80 through 87 for detailed lubrication procedures for the shop.

Section III. PREVENTIVE MAINTENANCE SERVICE

92. General

Preventive maintenance is performed by organizational maintenance personnel at weekly and monthly intervals. The weekly intervals will be equivalent to a maximum of 60 hours of use. The monthly intervals will be equivalent to 4 weeks or a maximum of 240 hours of use, which ever occurs first. The preventive maintenance services to be performed at these regular intervals are listed and described in table I. The maintenance function appearing at the columns opposite each service referred to indicates that a report of the service should be made the interval shown. These maintenance functions appear in the second column, and the interval at which the service is to be performed appears in the fourth and fifth columns. The first column headed "Item inspected" is provided for the information of the personnel performing the inspection. A listing in this column indicates that an inspection should be made of a list of items in accordance with the instructions given in the text opposite. The indicated items and instructions constitute minimum inspection requirements for the equipment.

93. Weekly and Monthly Preventive Maintenance Service

The services listed in tables II, III, and IV are minimum requirements and will be performed in accordance with the instructions therein.

Table II. Electrical System, Preventive Maintenance Services

Item Inspected	Inspect for	Services required	Intervals	
			Weekly	Monthly
GENERATOR	Operation and function.	See TM for generator.	X	
WIRING AND POWER CORDS	Cracked protective covers.	Wrap cracked areas with electrical tape or replace as required.	X	
	Loose connections.	Tighten screws; replace connections.	X	
	Damaged plugs	Replace plugs.	X	
	Loose wires	Return wire to proper position.	X	
	Frayed wiring	Wrap with electrical tape or replace as required.	--	X
	Deterioration	Remove deteriorated sec tions, splice and wrap with electrical tape.	--	X
	Broken conductors	Splice; wrap splices with electrical tape.	X	
CIRCUIT BREAKERS, SAFETY SWITCHES, RECEPTACLES	Condition	Replace broken knobs, handies, cover, missing screws; etc.	X	
	Security	Tighten clamps screws, knobs, and covers	X	
	Damage	Replace if major damage, re pair minor damage.	--	X
	Operation	Operate breakers, repair or replace as necessary. Operate switches; repair or replace as necessary. Check receptacle with equipment cords plugged in; repair or replace inoperative receptacles,	--	X
LAMPS	Inoperative tubes and bulbs; inoperative starters	Replace	X	
	Inoperative ON, OFF switches	Replace	X	

Table III. Pneumatic System, Preventive Maintenance Services

Item Inspected	Inspect for	Services required	Intervals	
			Weekly	Monthly
COMPRESSOR LINES AND HOSE	Operation and function	In accordance with TM for compressor (app. I.).	X	
	Leaks	Tighten or replace fittings, hose, or lines.	X	
	Security	Tighten mounting clamps or install new clamps.	--	X
	Damage	Repair or replace damaged sections.	--	X
QUICK DISCONNECT FITTINGS	Leaks	Replace seals, seats, or fittings, as necessary.	X	

Table III. Pneumatic System, Prevention Maintenance Services-Continued

Item Inspected	Inspect for	Services required	Intervals	
			Weekly	Monthly
	Ease of operation	Replace plugs	--	X
CONTROLS	Sticking and binding	Lubricate, repair replace as necessary.	X	
	Leaks	Replace packing rings.	X	
	Damage	Repair or replace as necessary.	X	
INSTRUMENTS	Cracked dial covers	Replace	--	X
	Accuracy	Remove for repair or calibration.	X	
	Damage	Repair or replace as necessary.	--	X

Table IV. Utility System, Preventative Maintenance Services

Item Inspected	Inspect for	Services required	Intervals	
			Weekly	Monthly
STORAGE CABINET DRAWERS	Sticking, binding and distortion.	Lubricate (pars. 89 and 90) aline or straighten as necessary.	--	X
STORAGE CABINET HINGE POINTS	Alinement, ease of operation, and condition	Aline hinges, lubricate (paras. 89 and 90) or replace as necessary.	--	X
STORAGE CABINET EXTERIORS	Corrosion, rust chipped, or peeling paint	Remove corrosion and rust (paras. 29 and 30), touch-up or repaint as necessary.	--	X
STORAGE CABINET LOCKING DEVICES	Security, ease of operation, and alinement	Tighten bolts, realine, reposition, or replace as necessary.	--	X
STORAGE CABINET MOUNTINGS.	Security	Tighten or replace mounting bolts as necessary.	--	X
BENCH TOP SURFACE.	Nicks, gouges, scratches	Sand out, refinish (ch. 6).	--	X
BENCH TOP MOUNTINGS	Security	Tighten or replace screw or bolts as necessary	--	X

Section IV. TROUBLESHOOTING

94. Use of Troubleshooting Section

This section contains troubleshooting information useful to second echelon personnel in diagnosing and correcting unsatisfactory operation or failure of the shop set or any of the components.

95. Procedure

Troubleshooting is a systematic isolation of defective components by means of an analysis of the shop set trouble symptoms, testing to determine the defective component, and applying the remedies. To correct malfunctioning of equipment, the probable

cause should be systematically isolated in accordance with instructions in the following paragraphs

96. Electrical Equipment Operates at Slow or reduced Speed

Probable cause	*Possible remedy*
Loose connectors	Tighten connectors.
Low voltage	Check incoming voltage.
Improper source of voltage	Check source voltage for specified requirements.
Cause beyond repair scope of operator	Notify supporting field maintenance unit.

97. Electrical Equipment Stops During Operation

Probable cause	*Possible remedy*
Power source disconnected	Check generator, external power cable, cords and circuit breakers.
Overheating of equipment	Check equipment for speed setting and voltage as necessary. Allow equipment to cool and re-start.
Overloading	Adjust feed or speed of equipment as necessary.
Cause beyond repair scope of operator	Notify supporting field maintenance unit.

98. Electrical Equipment Will not Start

Probable cause	*Possible remedy*
Power cord disconnected	Check rear power outlet for proper installation of power cord for generator or auxiliary power source.
One or more circuit breakers inoperative	Check circuit breakers and replace as necessary.
Safety switch inoperative	Replace safety switch.
Corroded prong or loose connection at power receptacle.	Clean prong and check connectors and plug for tightness.
Cause beyond repair scope of operator	Notify supporting field maintenance unit.

99. Pneumatic Equipment Operates at Slow or Reduced Speed

Probable cause	*Possible remedy*
Low air pressure	Check air pressure gages, and regulators; adjust as necessary.
Leak in air line(s) or loose connector(s)	Check air pressure at equipment; retrace air line(s); check for leaks and loose connectors (s).
Cause beyond repair scope of operator	Notify supporting field maintenance unit.

100. Pneumatic Equipment Stops During Operation

Probable cause	*Possible remedy*
Failure of source of power	Check compressor for operation; check incoming auxiliary line for pressure.
Overloading	Reduce feed, pressure on work, or speed as necessary.
Cause beyond repair scope of operator	Notify supporting field maintenance unit.

101. Pneumatic Equipment Will Not Start

Probable cause	*Possible remedy*
Source of power disconnected	Check connections at points of installation.
Faulty check valves	Check air pressure at regulators; replace check valves as necessary.
Break in air hose of equipment	Check air hose and replace as necessary.
Cause beyond repair scope of operator	Notify supporting field maintenance unit.

102. Excessive Vibration of Equipment

Probable cause	*Possible remedy*
Loose mounting bolts	Check mountings for security; tighten or replace bolts as necessary.
Equipment improperly loaded	Reduce loads, readjust load, or reduce speed as necessary.
Cause beyond repair scope of operator.	Notify supporting field maintenance unit.

103. Excessive Noise

Probable cause	*Possible remedy*
Lack of lubrication	Lubricate equipment in accordance with paragraphs 29 and 30.

Probable cause	*Possible remedy*
Improper use of equipment	Check specific handbooks for use of equipment.
Cause beyond repair scope of operator	Notify supporting field maintenance.

Section V. RADIO INTERFERENCE SUPPRESSION

104. Purpose

a. Radio interference suppression is the elimination or minimizing of the electrical disturbances which interfere with radio reception or disclose the location of the equipment to sensitive electrical detectors. Therefore, it is very important that equipment with, as well as equipment without, radios be suppressed properly to prevent interference with radio reception of surrounding equipment, or disclosing locations.

b. Suppression in the equipment is accomplished by the use of resistor Suppressors and capacitors. In addition, metal parts of the equipment are formed into a shield by use of braided bond straps and toothed washers, confining electrical disturbances so they cannot disturb receiving equipment.

105. Inspection

The operator of the equipment is responsible for the inspection of radio interference suppressors and the correction or reporting of any discrepancies discovered. Those sections of technical manuals which contain detailed instructions for radio interference suppression form a part of this manual. It is the responsibility of the operator to familiarize himself with these manuals and to perform the inspections listed herein.

Section VI. ELECTRICAL SYSTEM

106. General

A detailed description of the electrical system is contained in paragraphs 45 through 48.

107. Electrical Generator

Second echelon maintenance for the generator consists of inspection and replacement of parts in accordance with the technical manual for the generator and paragraphs 92 through 103 of this manual.

108. Electrical System, Electrically

Driven Air Compressor Second echelon maintenance for the electrical system of the air compressor, consists of inspection and replacement of parts in accordance with the technical manual for the compressor and paragraphs 92 through 103 of this manual.

109. Electrical Wiring Installation

a. General. The electrical wiring installation (figs. 10 and 11), is comprised of -

(1) Powercord for connecting generator or auxiliary power source to the external power receptacle of the shop.

(2) Conduit encased wires connecting the external power receptacle with the safety disconnect switch and continuing to the control panel.

(3) Wiring from the control panel to the various receptacles which supply current to the equipment to be operated.

Note. **The power cord of the electric motor of the air compressor is connected directly to the control panel and does not pass through a receptacle.**

b. Second Echelon Maintenance. Inspect and replace, as necessary, wiring, connectors, receptacles, and conduit in accordance with instructions in paragraphs 92 through 103 and appendix II.

110. Electrical Switches and Circuit Breakers

a. General. Electrical switches and circuit breakers are installed in the electrical system to allow individual control of circuits, distribute current, and as safety devices.

b. Second Echelon Maintenance. Inspect and replace switches or circuit breakers as necessary in

accordance with instructions contained in Chapter 6, Section III, and IV, and Appendix II.

111. Lighting System

Inspect and replace inoperative lighting tubes or bulbs in accordance with instructions in chapter 6, Sections III and IV, and appendix II.

***Note*. For details of shop lighting system, refer to TM 9-2330-238-14.**

112. Controls and Instruments

Controls and instruments (fig. 6), will be maintained by second echelon maintenance personnel to the extent authorized in appendix II, and in accordance with instructions in chapter 6. Sections III and IV. Refer to chapter 5, section II, for description, location, and illustration of controls and instruments.

Section VII. PNEUMATIC SYSTEM

113. General

A detailed description of the pneumatic system is contained in chapter 3, section VI.

114. Air Compressor

Second echelon maintenance for the air compressor (fig. 13), consists of inspection and replacement of parts in accordance with the technical manual for the compressor and chapter 6, sections III and IV of this manual.

115. Air Supply Tank

Inspect and replace parts of air supply tank in accordance with technical manual for compressor and chapter 6, sections III and IV of this manual.

116. Lines and Hose

Second echelon maintenance of air lines and air hose (figs. 14, 15, and 17), will consist of inspection and replacement of parts in accordance with chapter 6, Sections III and IV, and appendix II. Replacement parts are listed in chapters 8 and 9.

117. Controls and Instruments

Controls and instruments (fig. 7), will be maintained by second echelon maintenance personnel to the extent authorized in appendix II, and in accordance with instructions in chapter 6, sections III and IV. Refer to chapter 5, section II, for description, location, and illustration of controls and instruments.

Section VIII. UTILITY SYSTEM

118. Storage Cabinets

Second echelon maintenance of storage cabinets consists of inspection and replacement of parts as authorized by appendix II. Inspect and replace parts in accordance with instructions in chapter 6, sections III and IV. Refer to chapter 9. for replacement and repair parts.

119. Bench Tops

Second echelon maintenance for bench tops will consist of inspection and replacement of damaged or missing parts as authorized by appendix II.

CHAPTER 7

SHIPMENT AND LIMITED STORAGE (SECOND ECHELON)

Section I. SHIPMENT WITHIN CONTINENTAL UNITED STATES

120. General

Before shipment of the shop set, within the Continental United States, perform the procedures for limited storage listed in chapter 7, section III.

121. Preparation for Shipment

In addition to the instructions contained in chapter 4, section II, perform the preparation listed in TM 9-2330-238-14.

122. Hoisting, Handling, and Loading

Refer to TM 9-2330-238-14.

123. Securing

Refer to TM 9-2330-238-14, and paragraph 16 of this manual.

124. Methods of Transportation

Use flatcars, boxcars, or vehicular transportation for transporting the shop set.

125. Shipping Documents

Prepare all Army shipping documents accompanying the shop set in accordance with instructions listed in the technical manual for the item of equipment.

***Warning*: The height and width of shop sets, when prepared for rail transportation, must not exceed the limitations indicated by the loading table in the applicable Army Regulation. Local transportation officers must be consulted about limitations of the particular railroad lines to be used for the movements in order to avoid delays, dangerous conditions or damage to equipment.**

Section II. SHIPMENT OUTSIDE CONTINENTAL UNITED STATES

126. General

The procedures for shipment outside Continental United States, are essentially the same as those listed in Section I. Exceptions are in the methods of preparation for shipment; marine transportation will normally be used and the shop set will be secured in cargo holds or on decks of ships. Refer to TM 9-2330-238-14 for methods of securing, net handling, and boom procedures.

127. Preparation for Shipment

Waterproof the shop set, using methods outlined in TM 9-2330-238-14, and in chapter 7, section III of this manual. Refer to chapter 2, section V, and chapter 5, section V, of this manual for basic procedures to be followed when the equipment is exposed to salt water. Additional requirements consist of spraying taped areas and adjacent surfaces of the van with stripable plastic material conforming to Military Specification MIL-B-12121, or Military Specification MIL-C-36555. The coating thickness should be uniform and 0.030 to 0.040 inch thick.

Section III. LIMITED STORAGE

128. Inspection Before Storage.

Make a complete inspection of the shop set to determine its condition. Deficiencies will be corrected prior to placement of equipment in limited storage. Technical inspection will be performed on unboxed items.

129. Cleaning

Prior to application of any preservative or paint, thoroughly clean all surfaces. Scrub or wipe with a clean bristle brush or cloth soaked in cleaning solvent. When possible, subject the exterior surfaces of the shop to a stream of steam with or without added cleaning compound, followed by dry steam. Wire brush, buff, sand, or scrape, if steam is not available. Immediately after cleaning, dry with dry compressed air or by use of a clean, dry, wiping cloth.

***Caution*: Solvents are highly destructive to natural rubber and electrical insulation, and must not be used on these materials. Protect all electrical components during cleaning. Protect sensitive components from steam cleaning by sealing openings with pressure sensitive tape, Federal Specification PPP-T-60, or by disassembling and removing components when protection cannot be otherwise accomplished.**

130. Complete Lubrication

Refer to paragraphs 90 and 91.

131. Preservative Application

Coat precision machined surfaces with preservative conforming to Military Specification MIL-P-21260, Grade 2, or with preservative conforming to Military Specification MIL-C-6259, Type I, mixed with lubricating oil, in proportion of 1 part of preservative to 3 parts of lubricant.

132. Protection of Generator or Compressor

When this equipment is stored outside or otherwise subjected to rain or dust, it will be protected by covering with barrier material, Military Specification MIL-B-121, Grade A, in addition to the normal storage procedures outlined in the TM for the item.

133. Moisture proofing

a. Hang one humidity indicator, MS-20003, inside a window of the semitrailer and the trailer, in such a manner as to be visible from the outside.

b. Place 213 units of desiccant, Military Specification MIL-B-3464, inside the semitrailer mounted shop set, and 45 units inside the trailer mounted shop set.

***Caution*: Do not place desiccant in contact with finished surfaces of tools or equipment.**

c. Close shop sides and rear doors.

***Caution*: Sides and one door should be closed from airtight containers and installed in van. It takes on moisture rapidly.**

d. Seal all openings with tape, Federal specification PPP-T-60.

134. Inspection of Equipment in Limited Storage

When equipment has been placed in limited storage, all scheduled preventive maintenance services, including inspection will be suspended and preventive maintenance will be performed as specified herein.

***Note*. Vans should not be opened for entry unless humidity indicator shows an unsafe condition. In that event, tape seals should be checked for leakage, desiccant replaced, and doors resealed.**

a. Inspection Criteria. All equipment in limited storage will be inspected for any unusual conditions, such as damage, rusting, accumulation of water, pilferage, and leakage of lubricants and fuel.

b. Worksheet and Preventive Maintenance.

DA Form 460 (Preventive Maintenance Roster) and DD Form 314 (Preventive Maintenance Schedule and Record) will be executed on each major item of the equipment when equipment is initially placed into limited storage and every 30 days thereafter. Required maintenance will be performed promptly to insure that equip ment is mechanically sound and ready for immediate use.

CHAPTER 8

OPERATING INSTRUCTIONS (FIELD AND DEPOT MAINTENANCE)

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

135. General

Shop sets, when received are to be unloaded, uncrated, depreserved, and inspected by field and depot maintenance personnel.

136. Unloading and Uncrating New Equipment

a. Unloading. Remove shoring, blocks, tiedowns, and chocks before unloading equipment.

***Warning*: Remove nails and loose strapping from unloading area.**

***Caution*: Lift only at hoisting points provided when equipment is to be unloaded from heights above ground level (TM 9-2330-238-14).**

b. Uncrating and Servicing New Equipment. Uncrating and servicing procedures will normally be those outlined in paragraphs 65 through 68. Additional information required for unloading specific items is contained in the technical manual for the item.

c. Depreservation. Procedures for depreservation of new equipment will normally he as outlined in paragraphs 65 through 68.

d. Removal of Compound and Devices. Remove rust preventive compounds, protective grease, or other coatings from new parts prior to installation. Prepare new parts by pre-soaking or by other methods as necessary. Lubrication of new parts will be as prescribed in the appropriate lubrication order.

137. Installation

a. Location of Handtools. Following is a typical alphabetical listing of the location of common tools and equipment in drawers and storage cabinets provided. Cutout sections designed to fit and hold particular tools may be inserted in drawers. This is to protect tools, to make finding them easier and to hold them securely during transit. Drawers and open bins are numbered from 1 to 60 chronologically from top to bottom in rows, counterclockwise around the interior of the shop, starting at the right rear.

Tool and Equipment Drawer Location
Semitrailer Mounted, C-2 Electrical Shop

Storage drawer No.	Nomenclature	Total
13	Ammeter, portable, DC 0 to 3, 0 to 30 and 0 to 300 amp.	1
13	Ammeter, portable, DC 0 to 10 amp	1
13	Ammeter, portable, DC 0 to 10 amp	1
1	Apron, Batter Workers, cotton	2
2	Battery Filler, Gravity, jug type	1
2	Battery Filler, Syringe, 6 oz. cap.	1
4	Blade, Hand, Hacksaw, 33 teeth per in.	12
4	Blade, Hand, Hacksaw, 24 teeth per in.	12
11	Boots Knee, Rubber, size 6 or as required.	1
4	Brazing & Soldering Set, Acetylene gas (Prestolite)	1
1	Brush, Acid Swabbing, metal handle	6
1	Brush, Dusting, Bench	1
18	Caliper, Inside, spring-joint, 6 in.	1
18	Caliper, Outside, spring-joint, 6 in.	1
8	Coupling Half, quick-disconnect, female fluid connection end.	2
8	Coupling Half, quick-disconnect, male, fluid connection end.	2
8	Coupling Half, self-sealing, straight.	2
19	Crimping Tool, Terminal Hand	2
1	Dresser, Abrasive Wheel, Hand	1
11	Drill, Electric Portable, 1/4 in. Heavy Duty, 2000 rpm.	1
10	Drill Set, Twist, 1/16 to 1/2 in. size	1

Tool and Equipment Drawer Location
Semitrailer Mounted, C-2 Electrical Shop-Continued

Storage drawer No.	Nomenclature	Total
10	Drill Set, Twist, number sizes 1 to 60.	1
19	Extension, Socket Wrench, 3/8 in. sq. dr., 3 in. lg	1
19	Extension, Socket Wrench, 3/8 In. sq. dr., 6 in. lg	1
21	Extractor Set, Screw, No. 1 to 5 with drills, drill guides.	1
1	Faceshield, Industrial, plastic.	3
24	Pile Hand, American Pattern, flat type, double cut, bastard faces.	1
24	File, Hand, American Pattern double cut, second cut faces, 8 in. lg.	1
24	File, Hand, American pattern, double cut, smooth cut faces, 10 in. lg.	1
24	File, Hand, American pattern, double cut, bastard face, 10 in. lg. half-rd.	1
24	File Hand, American pattern, double cut, second cut, half-rd, 10 in. lg.	1
24	File, Hand, American pattern, Knife type, Double cut, smooth faces.	1
24	File Hand, American pattern, taper type, single cut, hand saw faces.	1
4	Frame, Hand, Hacksaw.	1
18	Gage, Screw Pitch, American National.	1
18	Gage, Tension, contact points and brushes, 0 to 80 oz.	1
1	Gloves, Rubber, men's synthetic.	2
30	Gun Air Blow, straight design.	1
31	Hammer, Hand, inserted face 1 1/2 in. Hd. Dia. w/2 ea. soft, medium, tough, and nylon faces.	2
24	Handle, File, Wood, medium size.	3
24	Handle, File, Wood, small size.	4
19	Handle, Socket Wrench, ratchet, 3/8 in. sq. drive.	1
28	Heat Gun, Electric, portable 110v	1
35	Hose, Rubber Air, 25 ft. lg.	2
34	Hot Plate, Electric, 110v, 60 c.	1
2	Hydrometer, Syringe, Battery.	2
35	Light, Extension, 50 ft. lg.	2
28	Light, Ignition, Timing.	2
28	Marking Machine, Electric, wire flexible insulating sleeving.	1
13	Multimeter, AC & DC, 0 to 4200 AC peak to peak voltage, range 4-step, 0 to 1500 DC voltage range.	1
13	Multimeter, 0 to 6000 v. DC, 7-step 0 to 1000 v. AC in 6-step.	
8	Nipple, Pipe, brass 1/4 in., 18NPSM	
30	degree angle of seat.	2
29	Oiler, Hand, 5 1/3 oz. cap.	2
30	Pump, Acid, Pneumatic, Hand.	1
25	Tachometer, Mechanical, hand held	1
32	Tap, Thread Cutting, No. 256 thds. per. in.	1

Tool and Equipment Drawer Location
Semitrailer Mounted, C-2 Electrical Shop-Continued.

Storage drawer No.	Nomenclature	Total
32	Tap, Thread Cutting, No. 4-40 thds. per. in.	1
32	Tap, Thread Cutting, No. 6-36 thds. per. in.	1
32	Tap, Thread Cutting, No. 8-32 thds. per. in.	1
32	Tap, Thread Cutting, plug, No. 2-56 thds. per. in.	1
32	Tap, Thread Cutting, plug, No. 4-40 thds. per. in.	1
32	Tap, Thread Cutting, plug, No. 6-32 thds. per. in.	1
32	Tap, Thread Cutting, plug, No. 8-32 thds. per. in.	1
32	Tap, Thread Cutting, taper No. 2-56 thds, per. in.	1
32	Tap, Thread Cutting, taper No. 4-40 thds. per. in.	1
31	Screwdriver, Flat Tip, 3/16 in. w. tip.	1
31	Screwdriver Set, Jeweler's.	1
20	Socket, 3/8 in. sq. dr., 1/2 in. opening.	1
20	Socket, 3/8 in. sq. dr., 9/16 in. opening.	1
20	Socket, 3/8 in. sq. dr., 5/8 in. opening.	1
20	Socket, 3/8 in. sq. dr., 11/16 in. opening.	1
20	Socket, 3/8 in. sq. dr., 3/4 in. opening.	1
28	Soldering Gun, 115 v, 60 c.	2
28	Soldering Iron, Electric, Pencil Type.	1
28	Soldering Iron, Electric, Pyramid shape.	2
28	Soldering Iron, 28 v.	1
28	Soldering Pliers, Electric, 115 v v, w/2 extra sets of carbons.	1
32	Tap, Thread Cutting, taper No. 6-32 thds. per in.	1
32	Tap, Thread Cutting, taper No. 8-32 thds. per in.	1
32	Tap, Thread Cutting, taper No. 6-40 thds. per in.	1
82	Tap, Thread Cutting, Taper No. 8-36 thds. per in.	1
82	Tap, Thread Cutting, Taper No. 10-82 thds. per in.	1
18	Test Set, Ohm meter-continuity light.	1
36	Test Set, Fire Detector System, Field	1
36	Test Set, Armature, 115 v., 60 c.	1
20	Universal Joint, Socket Wrench, 3/8 in. sq. drive.	1
36	Voltmeter, portable, AC 0-5, 1-150, 0-300 v.	1
36	Voltmeter portable, DC, 0 to 50 cw. 1000 ohms.	1
1	Wheel, Buffing, muslin bleached	2
21	Wrench Box, 5/8 and 11/16 in. opn.	1
21	Wrench Box, 3/4 and 7/8 in. opn.	1

Tool and Equipment Drawer Location: Semitrailer Mounted, C-2 Electrical Shop-Continued.

Storage drawer No.	Nomenclature	Total
21	Wrench Box, 13/16 and 7/8 in. opn.	1
21	Wrench Box, 15/16 and 1 in. opn.	1
21	Wrench, Open End, 11/16 and 25/32 in. openings.	1
21	Wrench, Open End, 3/4 and 13/16 in. openings.	1
21	Wrench, Open end, 7/8 and 15/16 in. openings.	1
21	Wrench, Open End, 1 and 1 1/16 in. openings.	1
21	Wrench, Tap and Reamer, Adjustable 0 to 1/4 in.	1
21	Tool Kit, Electrical, midget w/ ignition pliers & screwdriver, 11 pieces in roll.	1
21	Adapter, Barrel Clamp	1
21	Adapter, Swivel (19315)	1
35	Pusher, Bearing (19315) QB30038-4.	1
35	Puller Starter (19315) P/N QB80338-1.	1
35	Pusher, Piloted Bearing (19315) P/N QB80009-3.	I
35	Pusher, Piloted Bearing (19315) P/N QB80009-2.	1
22	Wrench, Spanner (19315) P/N QB80006-1.	1

Tool and Equipment Drawer Location Semitrailer Mounted, C-2 Electrical Shop-Continued.

Storage drawer No.	Nomenclature	Total
22	Wrench, Clutch, Nut Adjusting (19315) P/N QB80101-4.	1
22	Guide (19315) P/N QB80115-1	1
22	Wrench, (19315) P/N QB80101-6	1
22	Wrench, Generator Shaft (19315) P/N QB80059-1.	1
22	Wrench, Open End, Adjustable 0 to 15/16 in jaw opening, 8 in. lg.	1
22	Wrench, Open End, Adjustable 0 to 0.760 in. opening, 6 in. lg.	1
1	Applicator, Decal.	1

b. Location of Mounted Equipment, Semitrailer. In some instances, tools, equipment, or instruments are mounted on walls, floor, or benches of the shop. These items are either too large for cabinet storage, or their use makes cabinet storage impractical. Refer to figures 24 through 27 for floor plan of semitrailer mounted shop set.

(1) *Press arbor*. The press is bench mounted as shown in figure 36, typical mounting method. Details of mounting location are shown in figure 24.

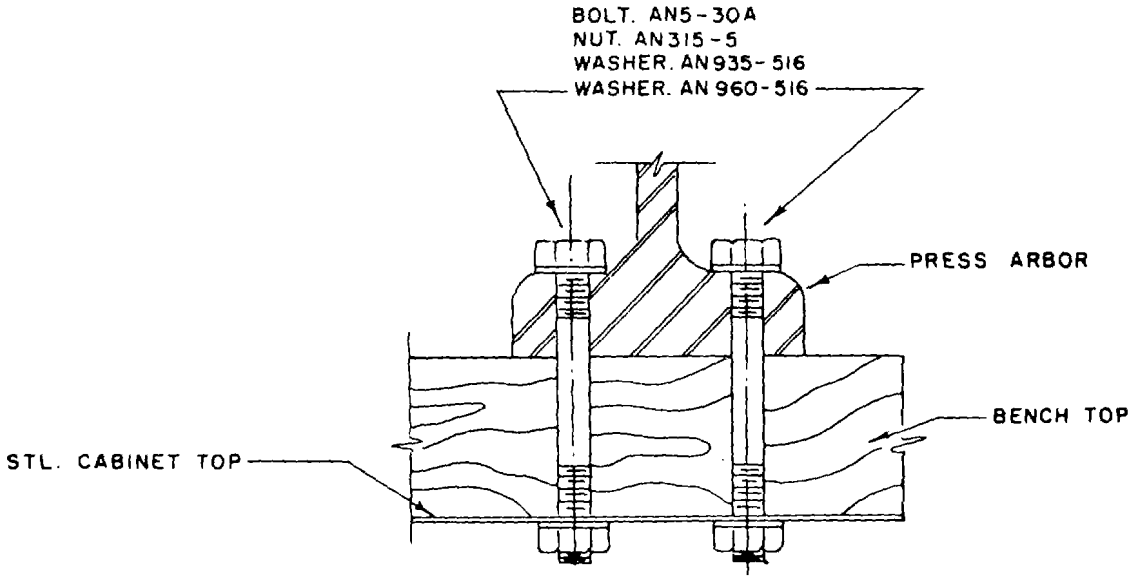


Figure 36. Typical bench top mounting, arbor press.

(2) *Upright drilling machine.* The drilling machine is bench mounted (fig. 37). Location is shown in figure 24.

(3) *Vise, machinists*. The vise is bench mounted. Refer to figure 38 for typical mounting method. Details of mounting location are shown in figure 25.

(4) *Spark plug fixture*. The spark plug fixture is bench mounted (fig. 25). Typical mounting arrangement is shown in figure 39.

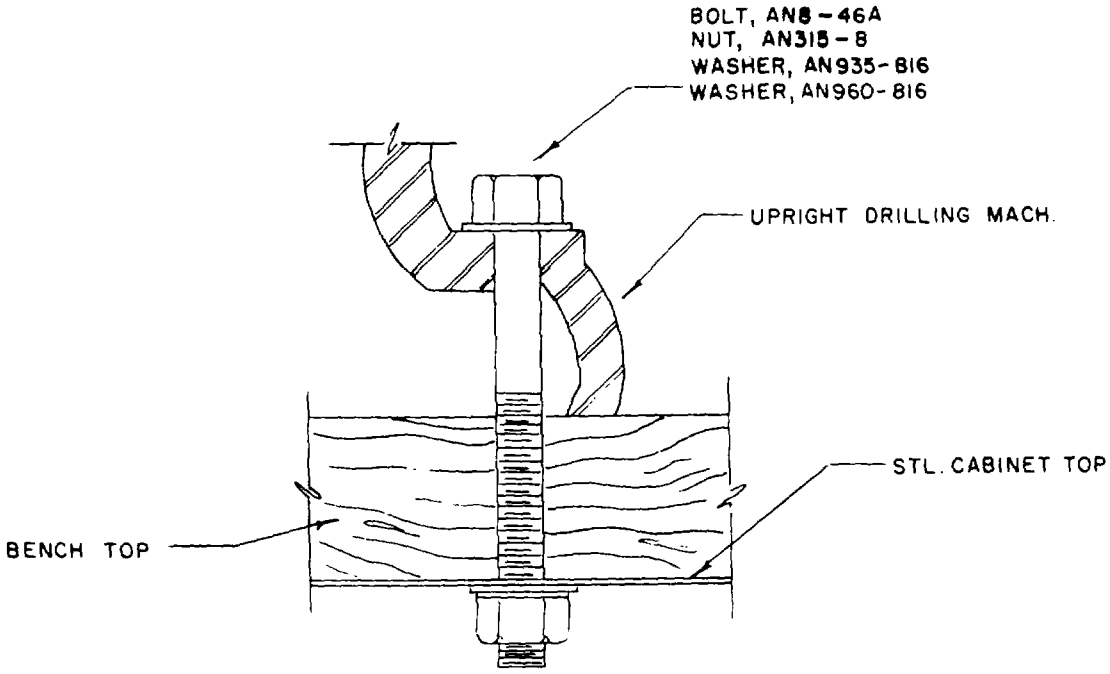


Figure 37. Typical bench top mounting, upright drilling machine.

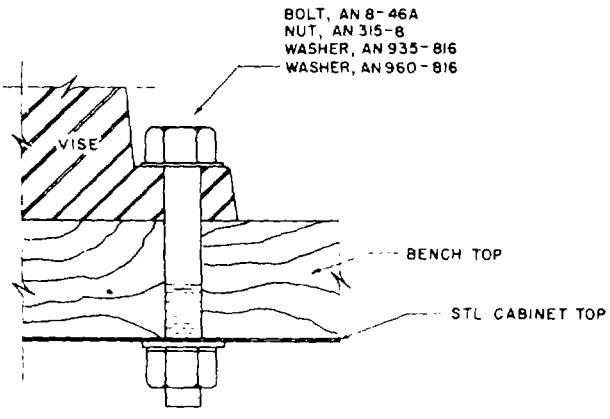


Figure 38. Typical bench top mounting, machinists vise.

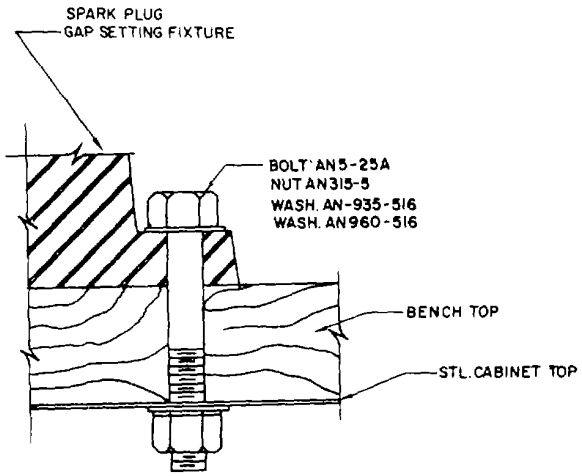
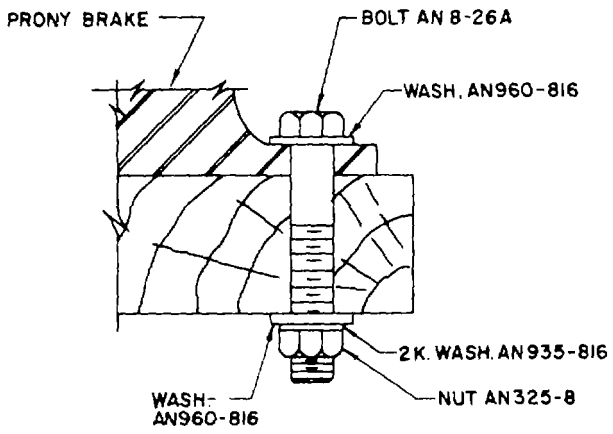


Figure 39. Typical bench top mounting, spark fixture.



TYPICAL PRONY BRAKE MOUNTING.

Figure 40. Typical bench top mounting, starter prony brake.

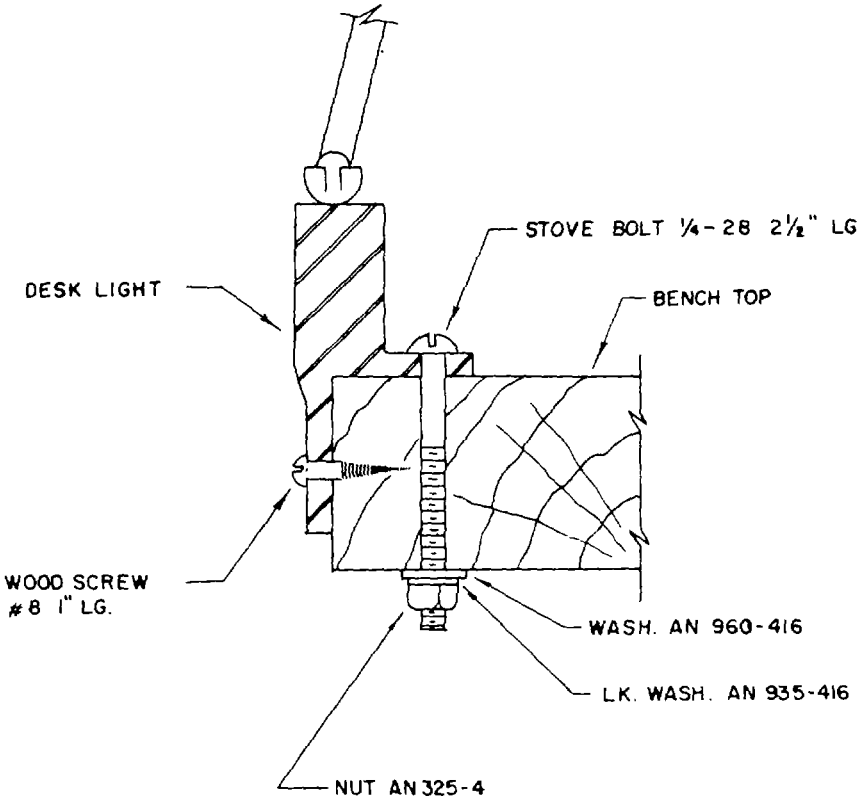
(5) *Starter prony brake*. The starter prony brake is bench mounted (fig. 25). Typical mounting method is shown in figure 40.

(6) *Desk light*. The desk light is bench mounted (fig. 25). Typical Mounting Method is shown in figure 41.

(7) *Test stand, aircraft*. The aircraft test stand is self contained. Mounting locations is shown in figure 24.

(8) *Test stand, aircraft power system*. The power system test stand is self contained. Mounting location is shown in figures 24 and 25.

(9) *Test stand, magneto*. The magneto test stand is floor mounted. Refer to figure 42 for typical mounting method. Details of mounting location are shown in figure 24.



TYP. DESK LIGHT MTG.

Figure 41. Typical bench top mounting, desk light.

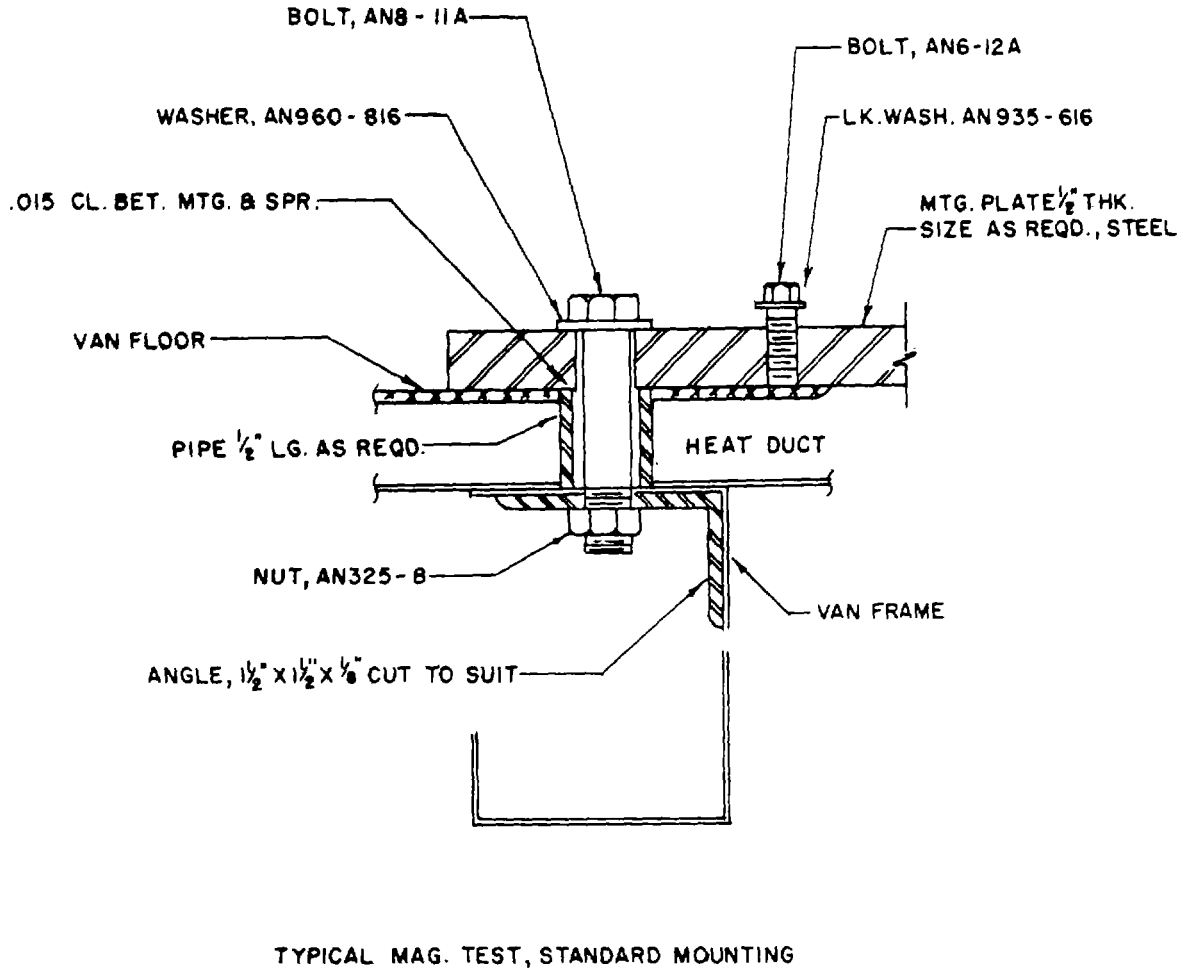


Figure 42. Typical mounting, magneto test stand.

(10) *Freon gas tanks*. The freon gas tanks are mounted on the left side of the forward platform (fig. 24). Mounting location and details are shown in figures 43 through 47.

(11) *Compressor, reciprocating, power driven*. The compressor and electric motor are mounted on the forward platform of the shop (figs. 24 and 25). Mounting details are shown in figure 12 and fig. 48. The air tank for the compressor is mounted underneath the forward floor of the shop (figs. 21 and 22). Mounting details are shown in figures 49 and 50.

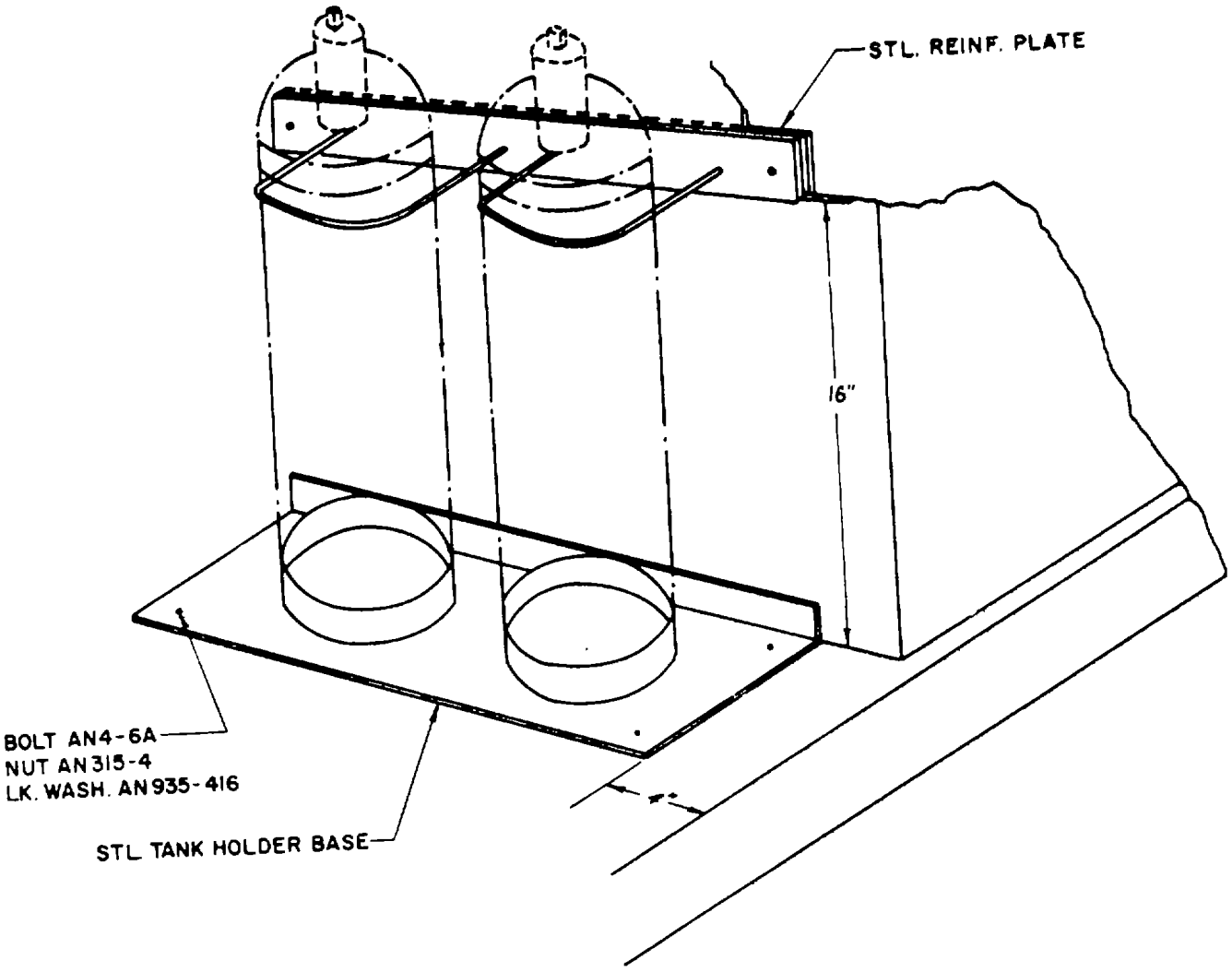
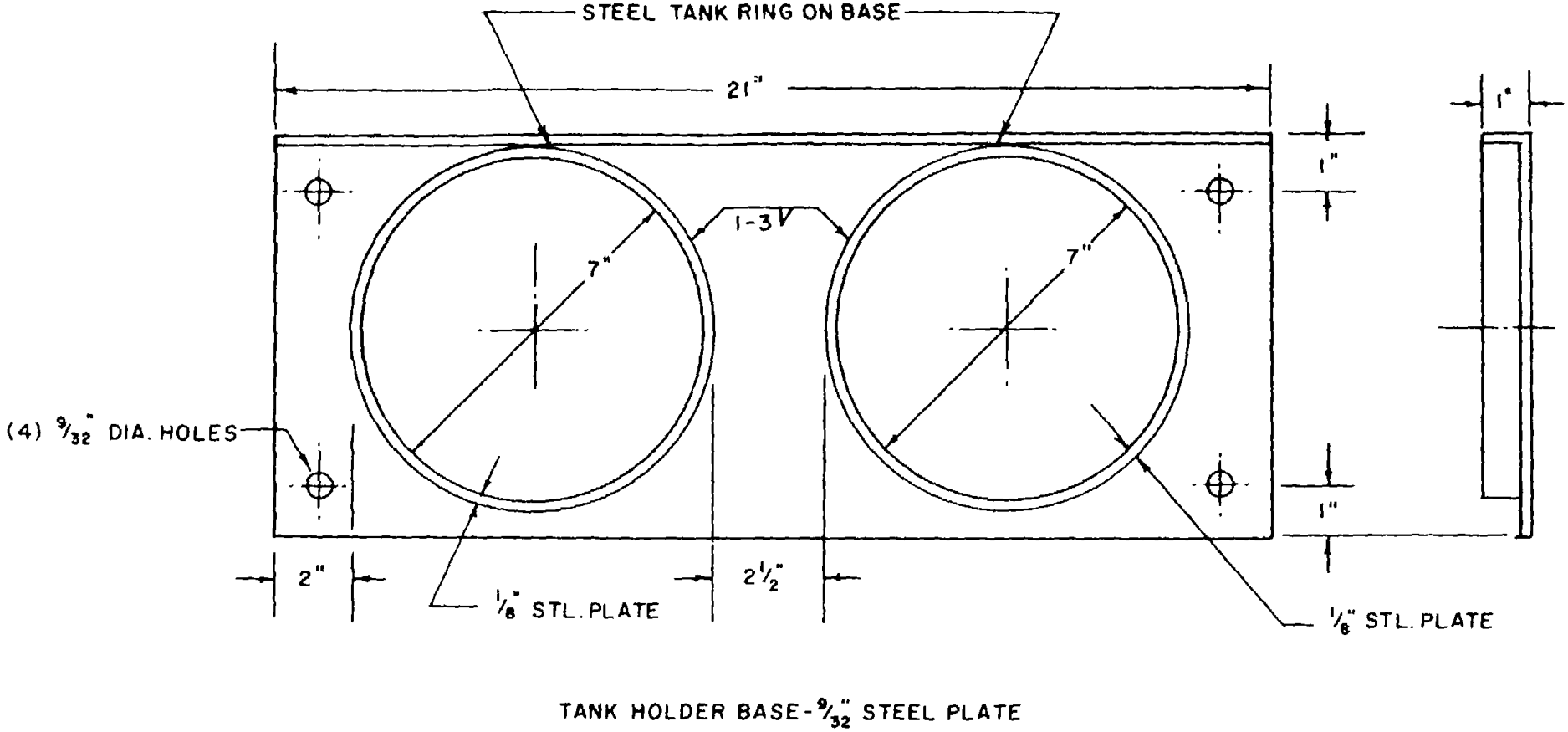


Figure 43. Tank holder assembly and location.



TANK HOLDER BASE-9/32" STEEL PLATE

Figure 44. Tank holder base.

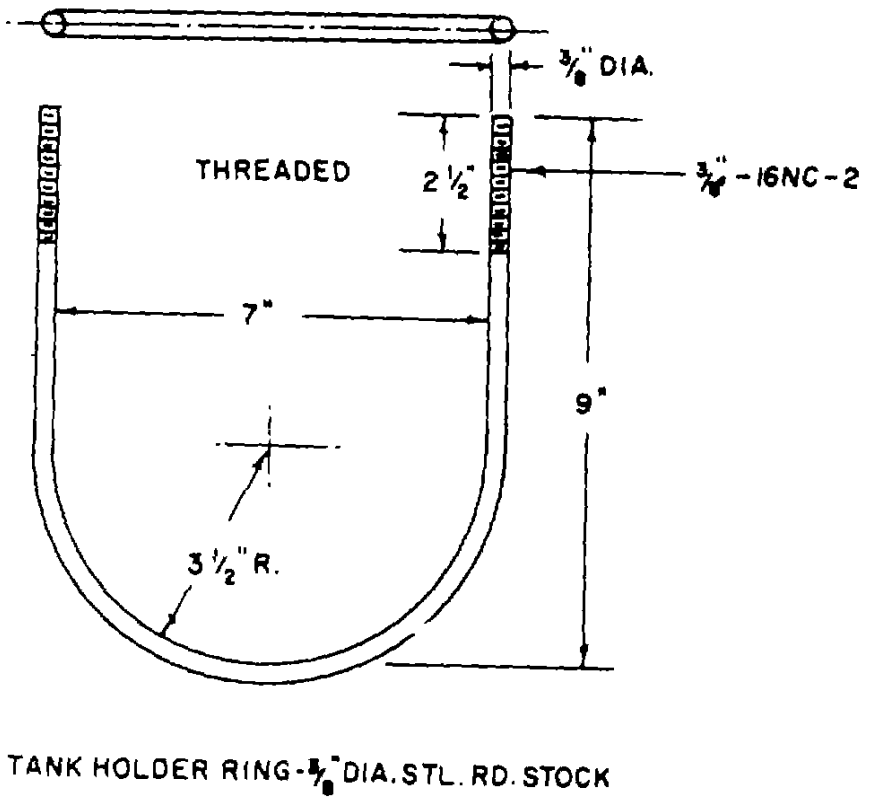


Figure 45. Tank holder ring.

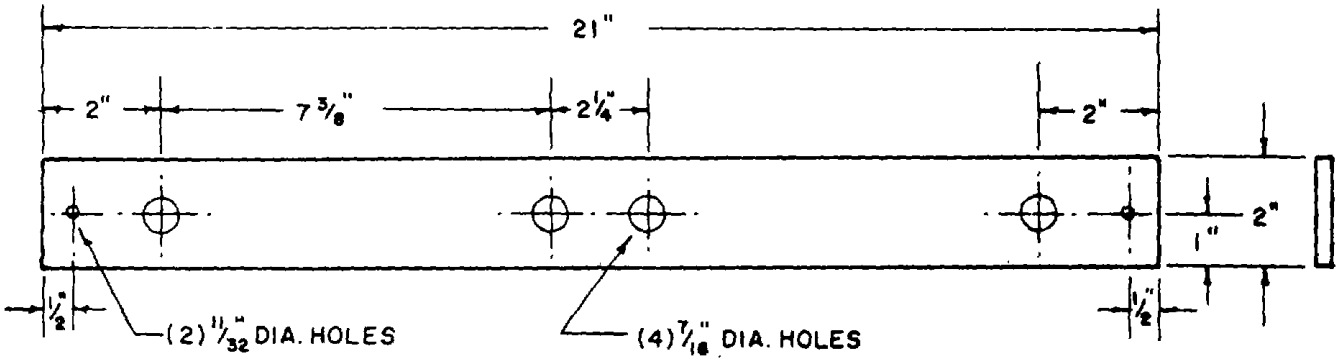


Figure 46. Reinforcement plate.

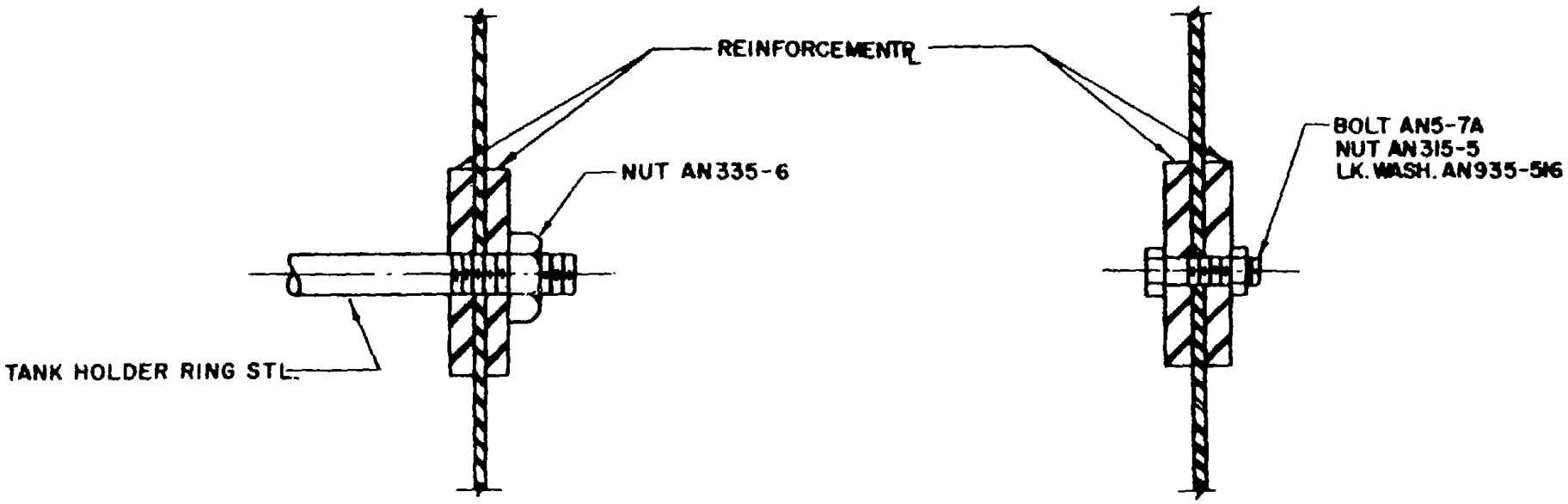


Figure 47. Tank and plate mounting, sectional view.

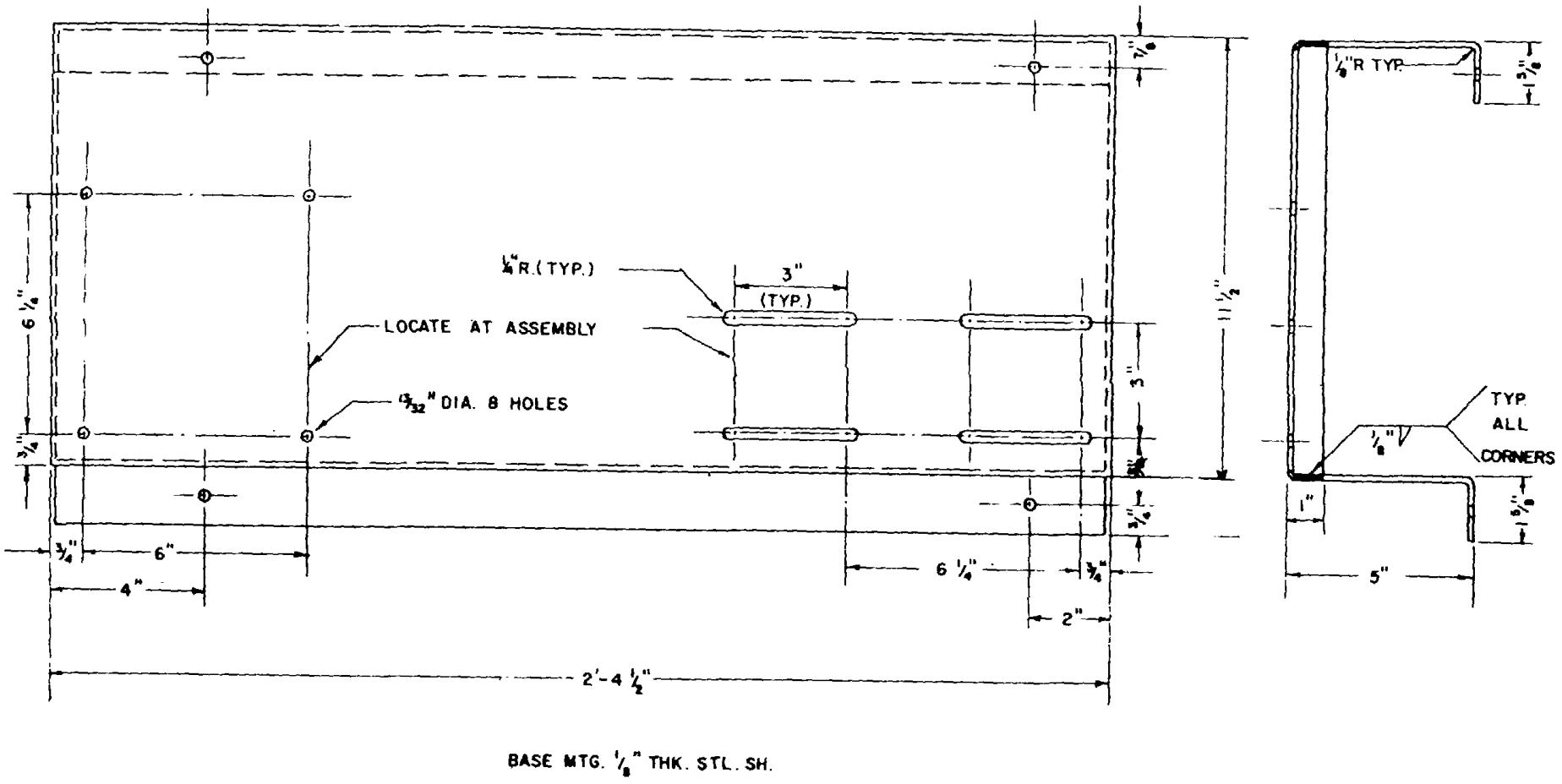


Figure 48. Details, compressor mounting.

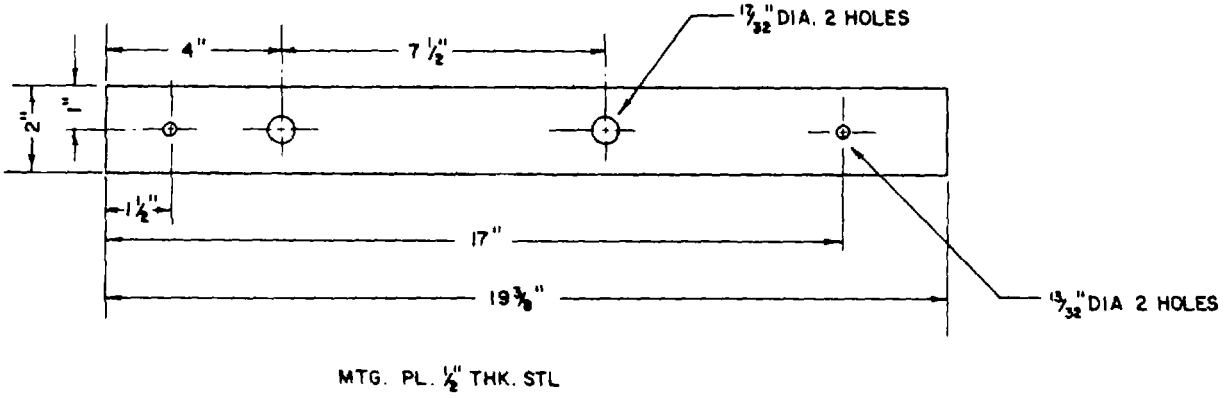


Figure 49. Compressor tank mounting plate.

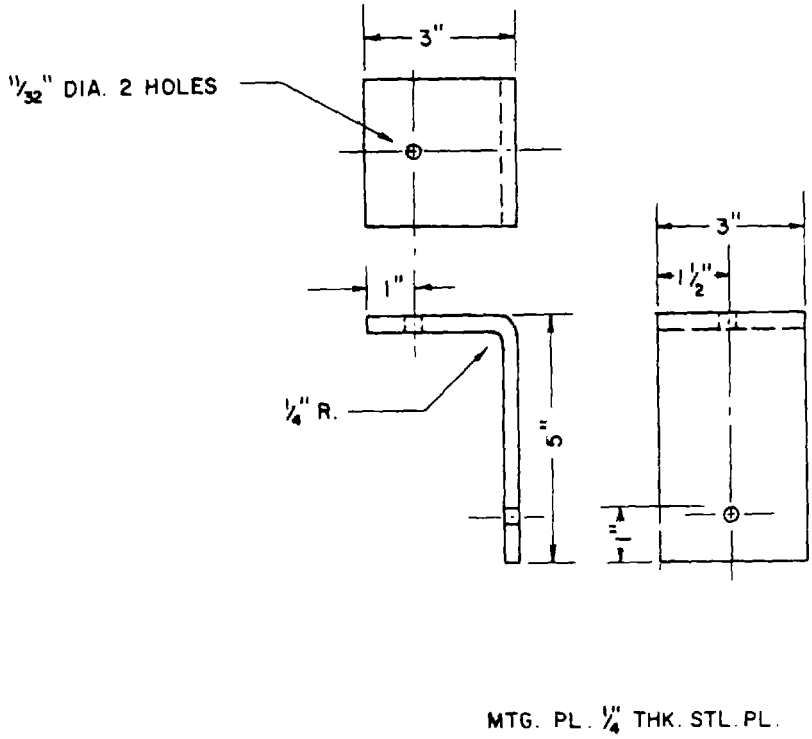


Figure 50. Mounting bracket, compressor tank.

(12) Generator, 30 kw, trailer mounted. The generator is wheel mounted and liquid cooled; it is a self contained unit.

(13) *Bench tops.* Bench tops are mounted on the top of the storage cabinets. Lag screws are installed to mount the bench tops as shown in figure 51. Additional security of the bench top obtained when bench mounted equipment is installed, as the mounting bolts for the equipment pass through the bench top and the storage cabinet top (figs. 36 through 41).

(14) *Cabinets, storage.* Storage cabinets are floor mounted and bolted together when adjacent. Typical mounting details are shown in figures 52 and 53.

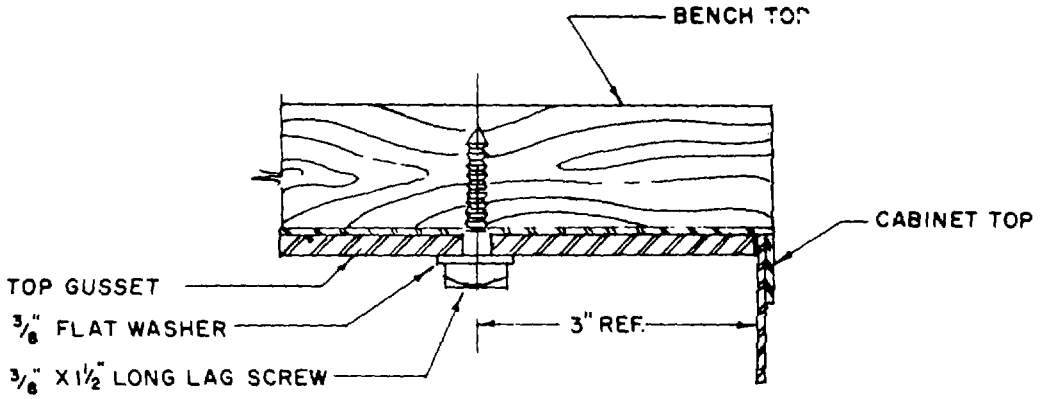


Figure 51. Bench top mounting typical installation.

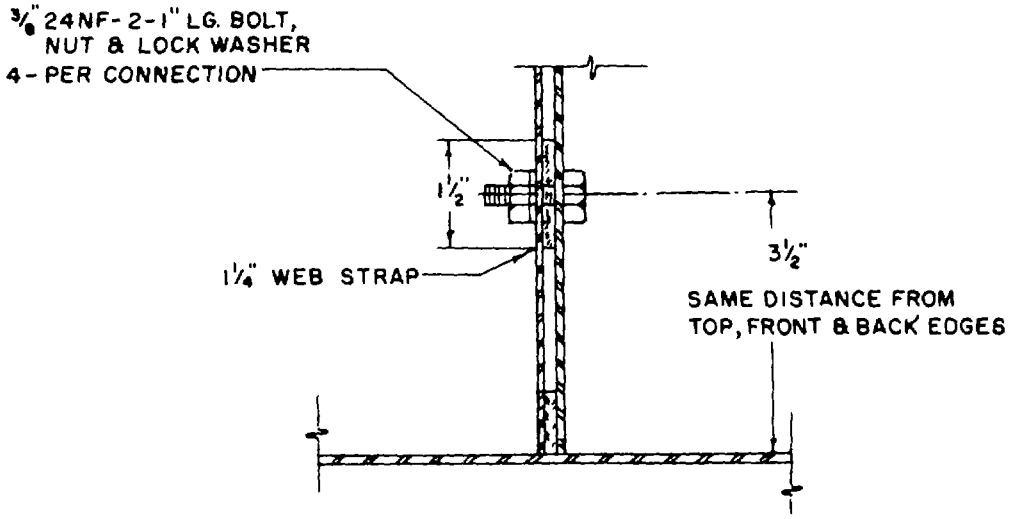


Figure 52. Mounting adjacent cabinets.

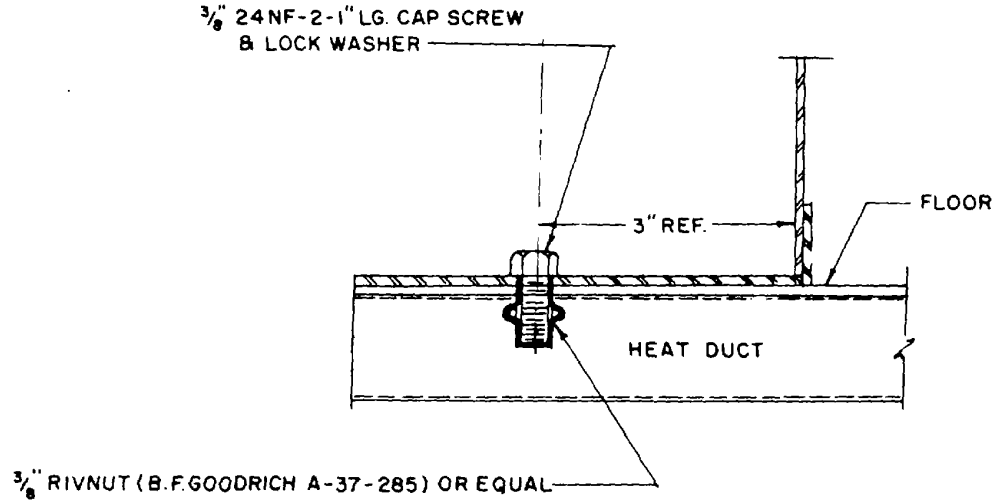


Figure 53. Storage cabinet mounting, floor.

(15) *Chain guard railing.* Refer to figure 34 and TM 9-2330-28-14. The chain guard railing is installed on the outer edges of the folding shop doors when doors are in the down position.

(16) *Ventilation.* The shop is provided with adequate ventilation facilities for normal operating conditions. Ducts, vents, and ventilating equipment should be checked periodically for cracks, dents, obstructions, and functioning of equipment. When the equipment is operated in extreme heat, ventilation equipment should be inspected as often as practical to insure proper operation of the equipment and operator comfort. Details of ventilation facilities are shown in TM 9-2330-238-14.

c Location of Mounted Equipment, Trailer. Floor plans for the trailer are shown in figures 26 and 27. Wiring diagram is shown in figure 11. Location and mounting details 'for the trailer mounted shop set equipment are listed in the following paragraphs.

(1) *Canvas cover storage bracket*. This bracket is mounted at the left front of the shop. Details of the bracket are shown in figure 54.

(2) *Battery charger, rectifier.* The charger is mounted at the right center of the shop. Details of the mounting plate are shown in figures 55 and 56.

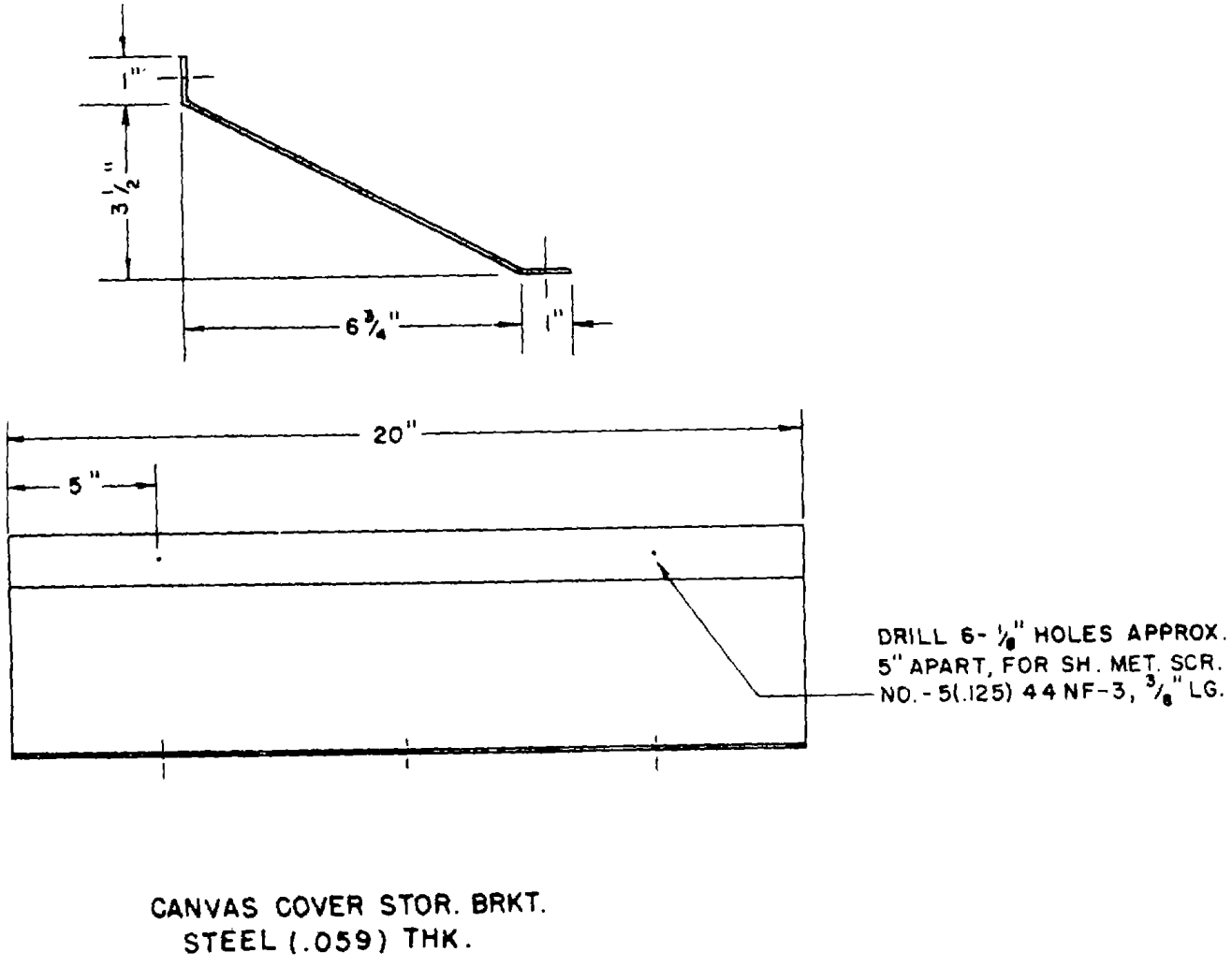


Figure 54. Canvas cover storage bracket.

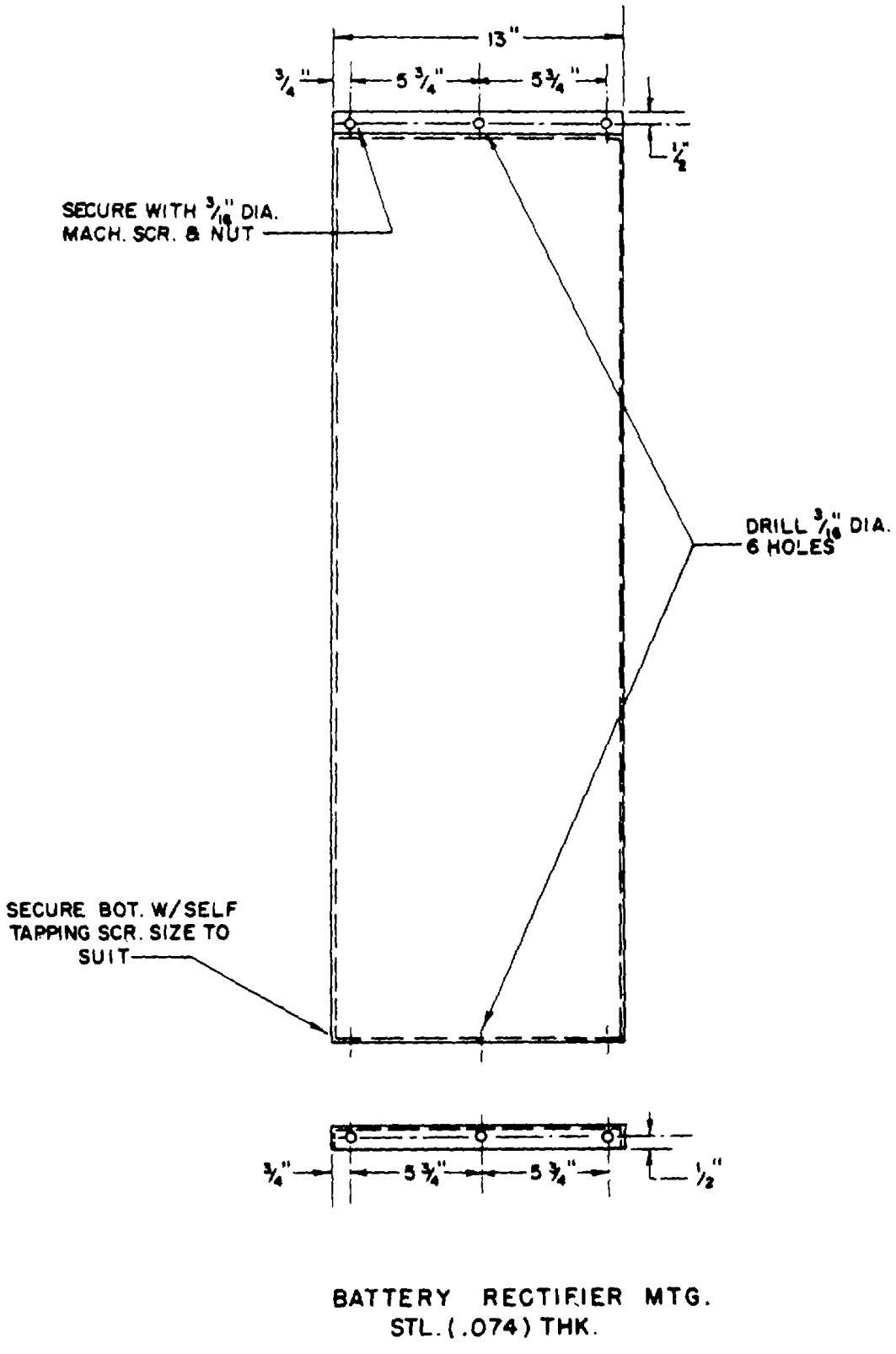


Figure 55. Battery charger rectifier mounting, front and end view.

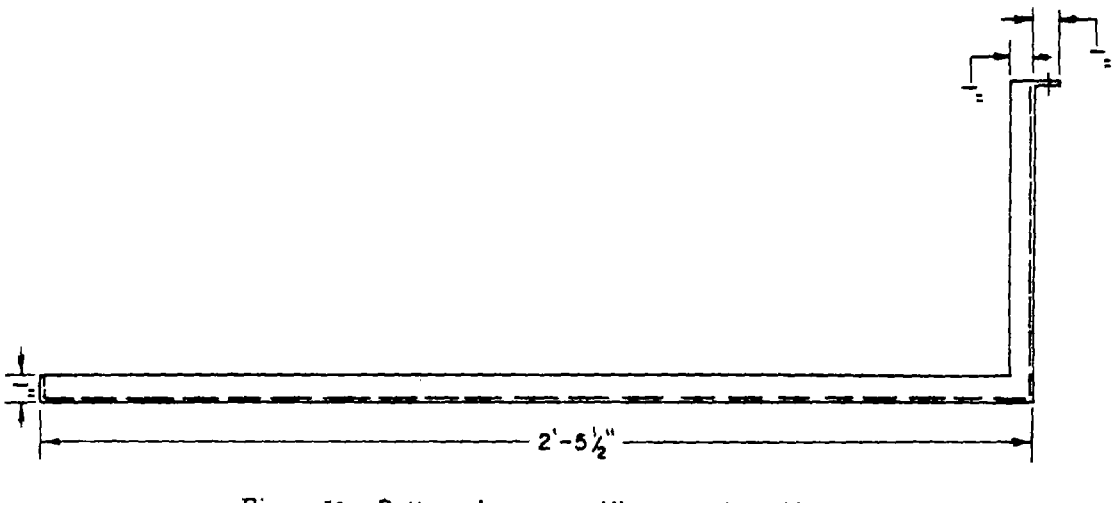


Figure 56. Battery charger rectifier mounting, side view.

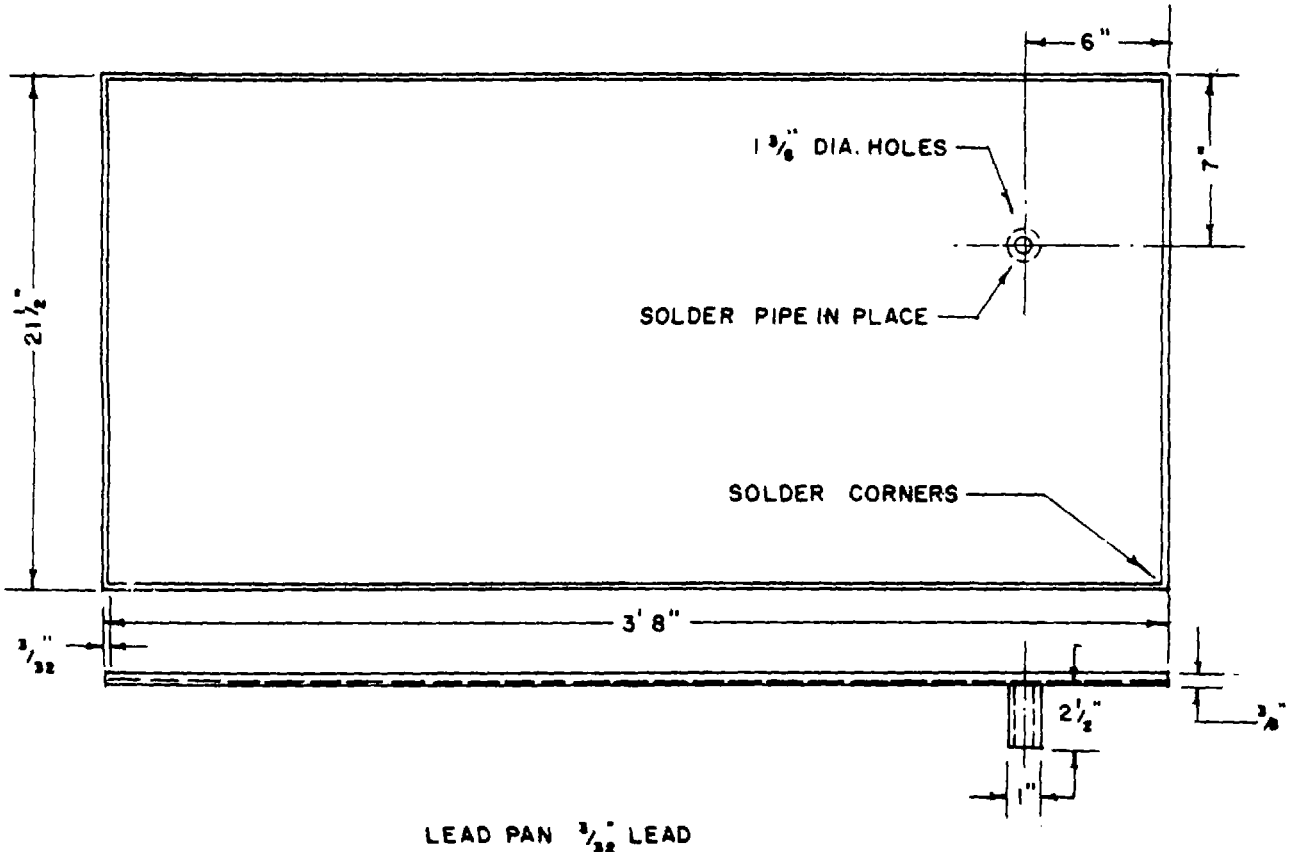


Figure 57. Lead pan.

(3) *Lead pans (figs. 57-60).* Two lead pans are located on the right door of the trailer. A plywood support is installed underneath each pan and a cover is provided for each pan when not in use or in transit. Three hold-downs (fig. 60), are provided to secure the pans and covers.

Caution: **Place tiedown in position and secure in place prior to opening or closing door.**
Caution: **Remove fillercap covers from lead pans before using.**

(4) *Acid tank.* The acid tank is mounted over the left wheel well. Mounting angles are shown in figure 61.

(5) *Battery tester.* The battery tester is located at the right rear of the shop. Mounting straps and angles are shown in figures 62 and 66.

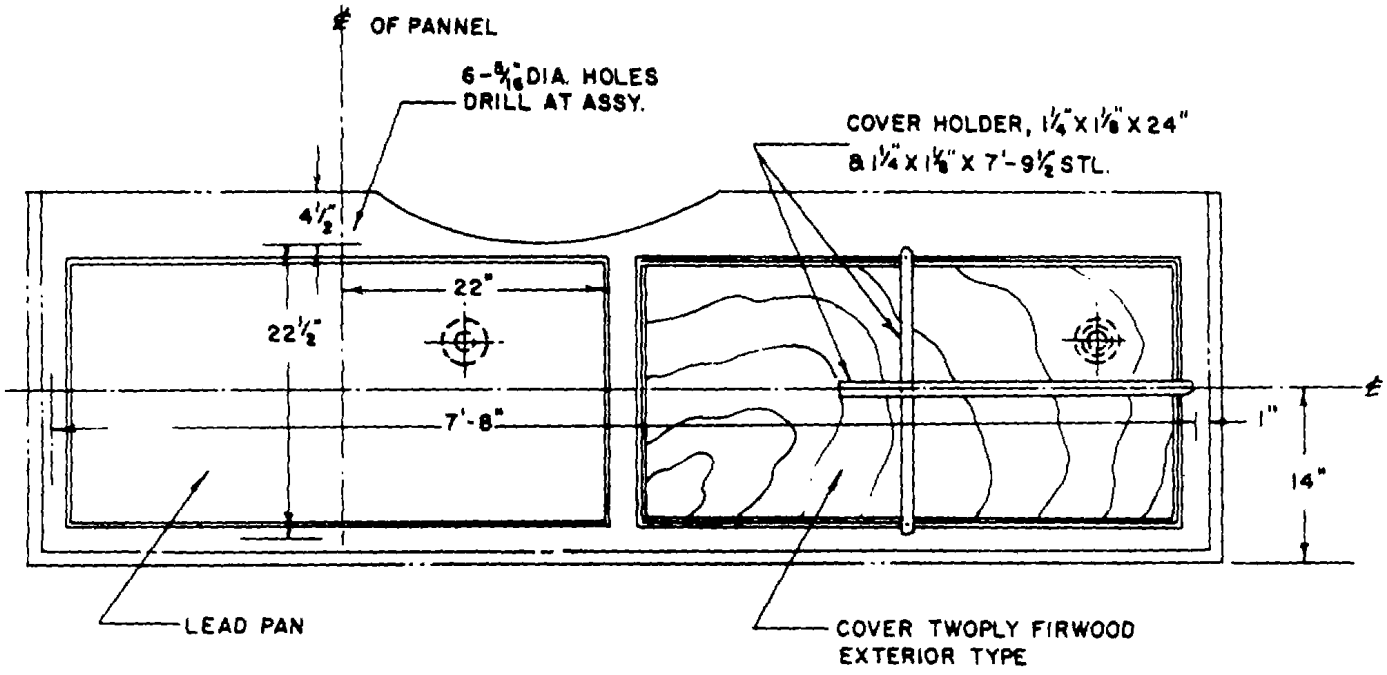


Figure 58. Lead pan, right side elevation.

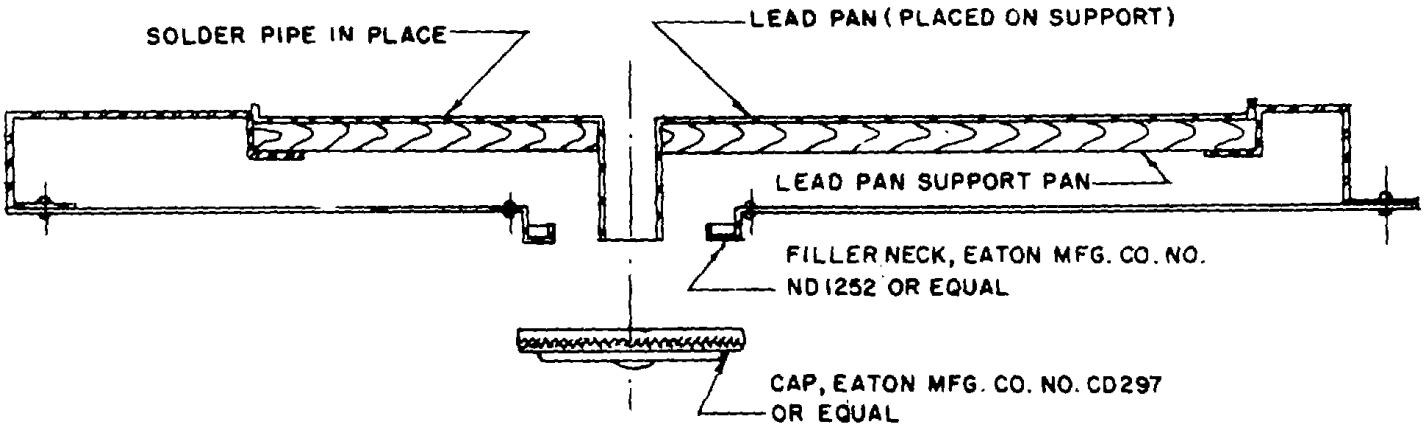
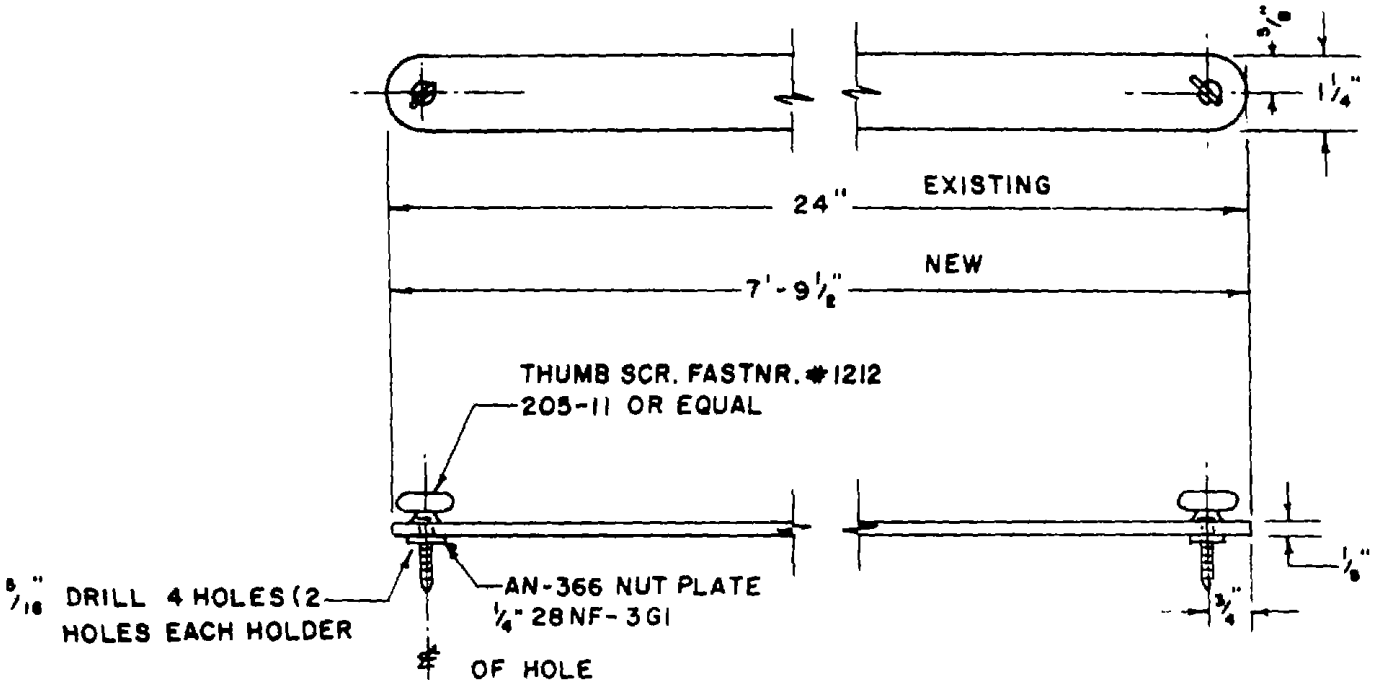
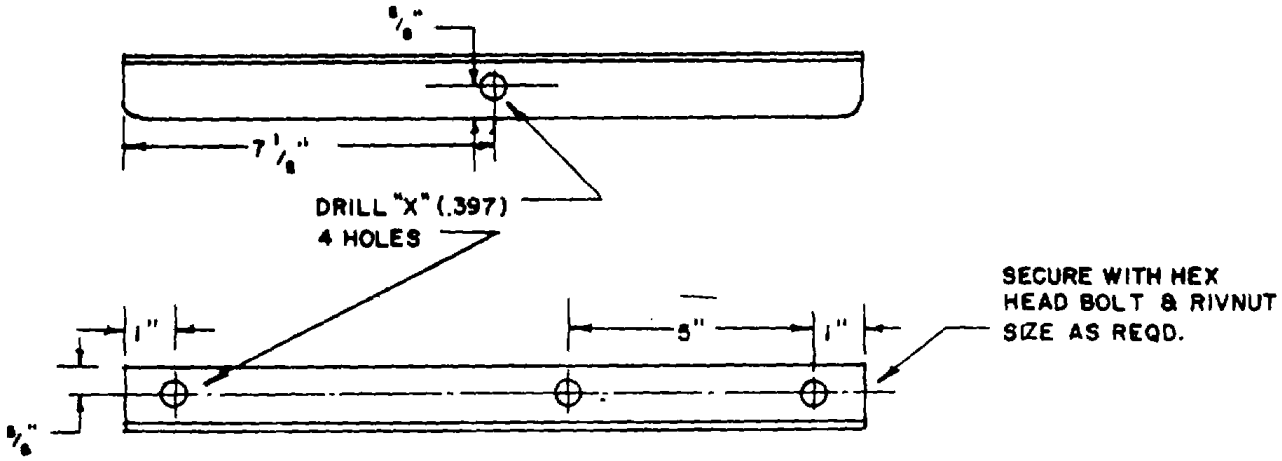


Figure 59. Lead pan, sectional view.



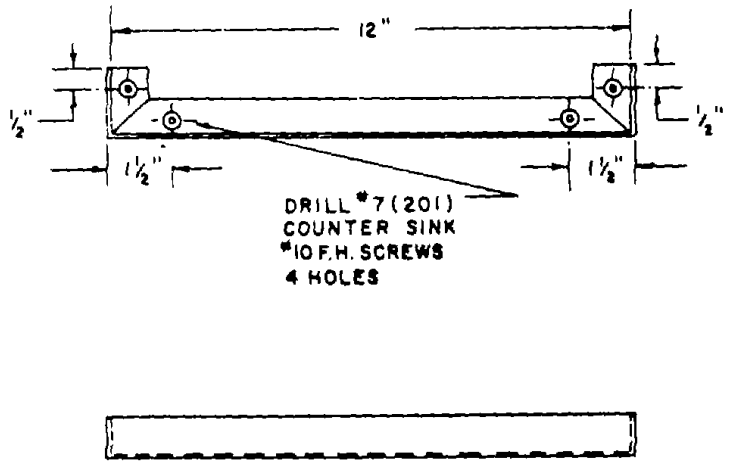
COVER HOLDER 1¼" X ⅛" X 24" &
1¼" X ⅛" X 7'-9½"

Figure 60. Cover holder, lead pan.



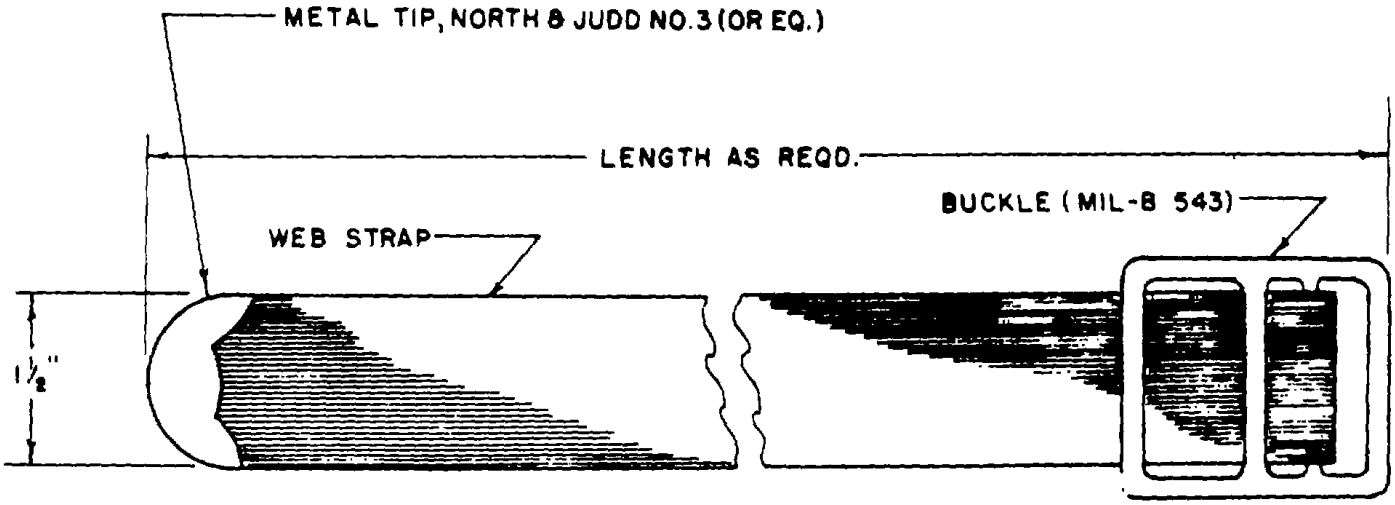
TANK MOUNTING
STL. L, 1" X 1" X ⅛"

Figure 61. Tank mounting angles.



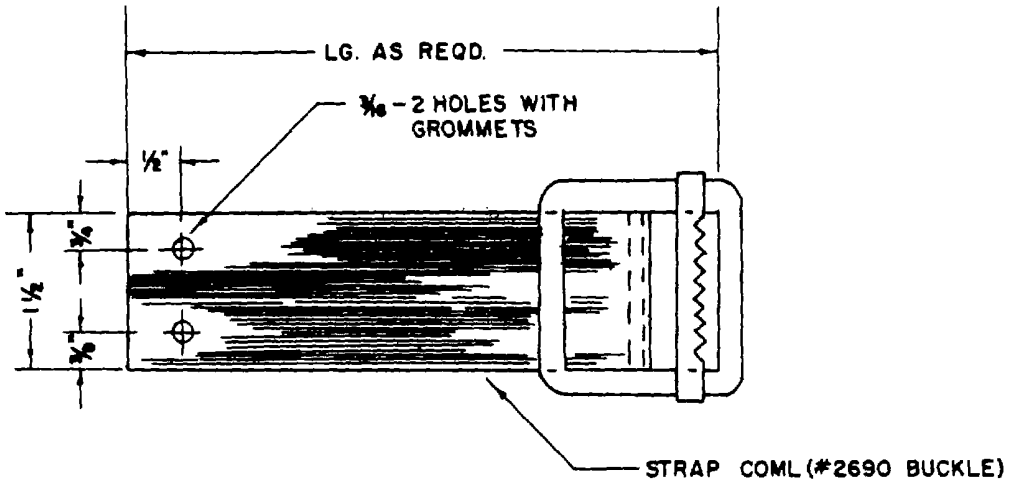
BATTERY TESTER MTG.

Figure 62. Battery tests mounting angle.



TIE DOWN STRAP

Figure 63. Strap, continuous type.



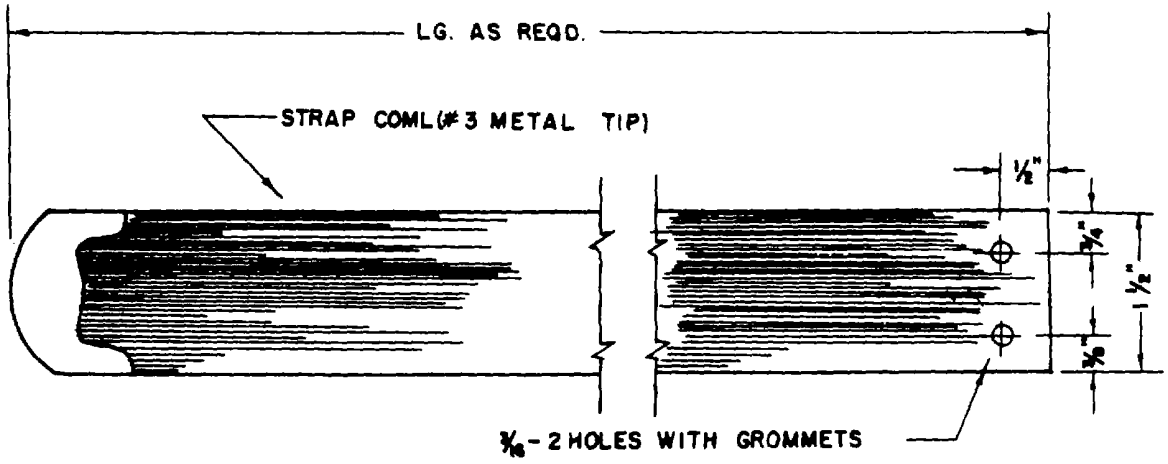


Figure 64. Strap, bolted type.

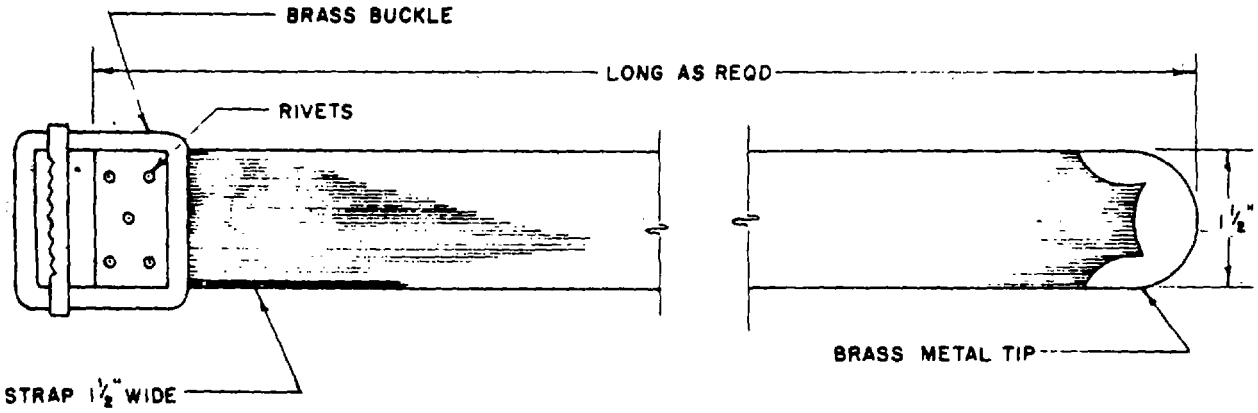


Figure 65. Strap, riveted type

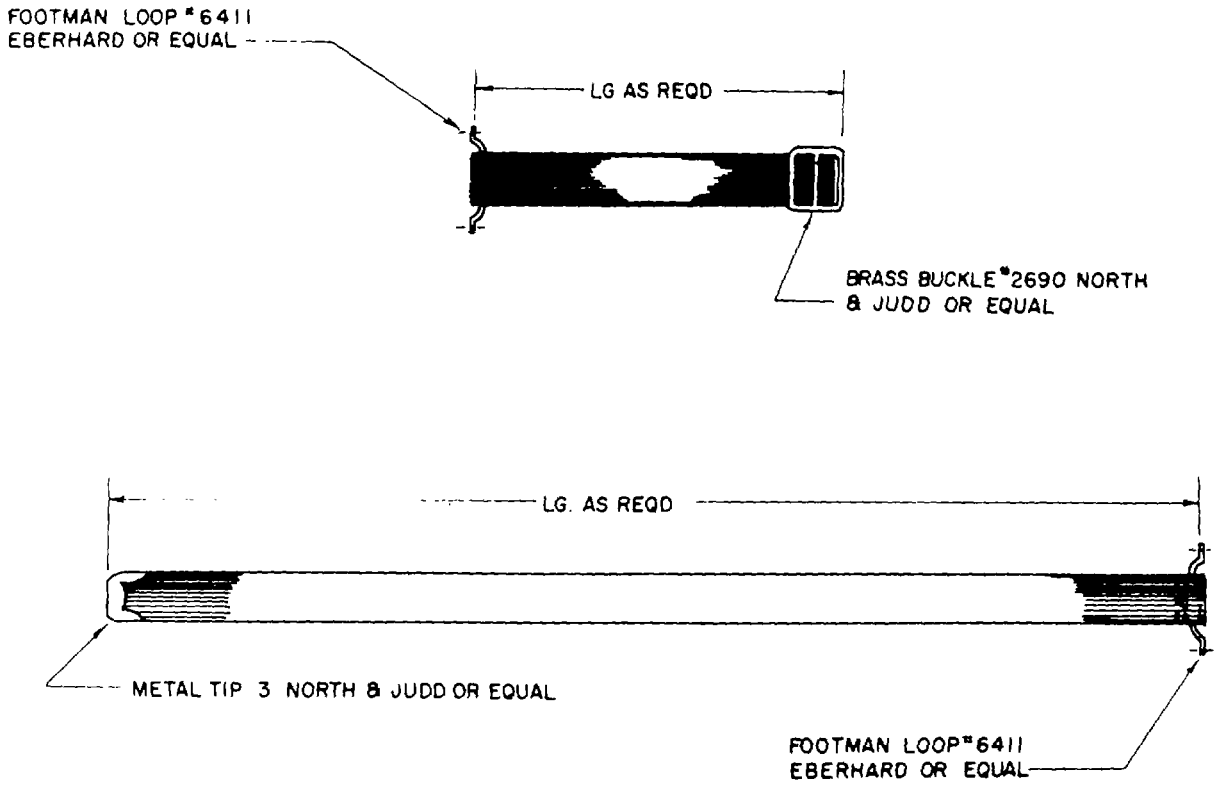


Figure 66. Strap, sewn type.

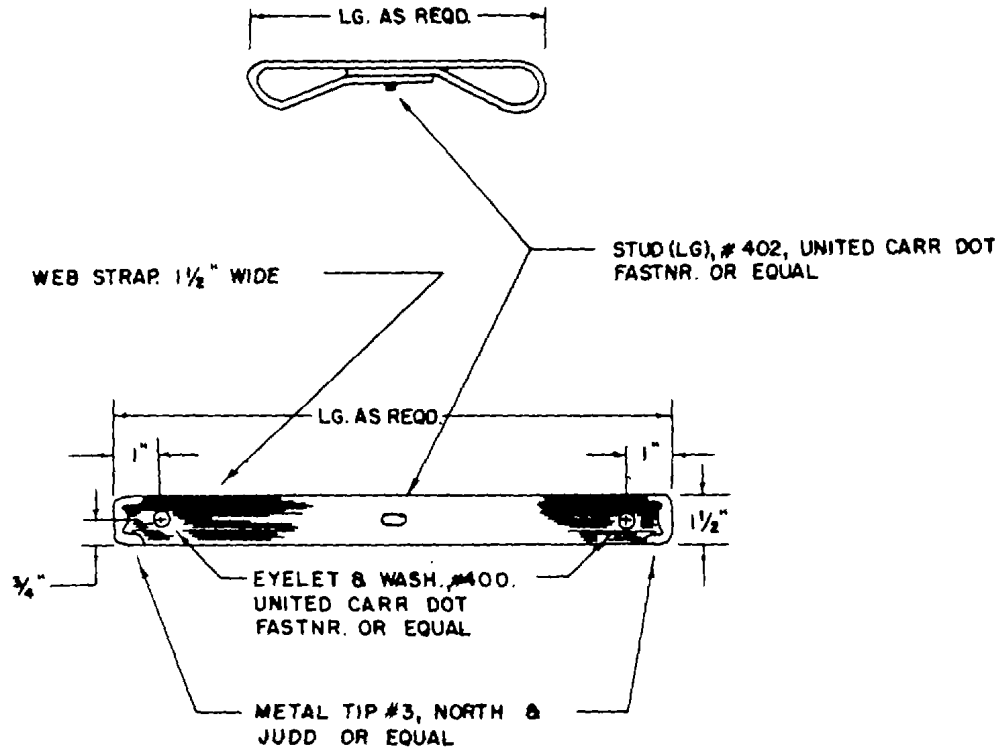


Figure 67. Strap, loop type.

(6) *Jack holder.* The jack holder is located at the left rear of the shop. Mounting details are shown in figures 65, 68 through 70.

(7) *Get, 5 kw.* The generator is mounted at the front center of the shop. Generator mounting details are shown in figures 71 through 74.

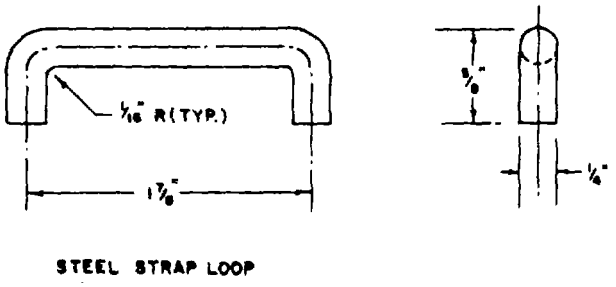


Figure 68. Strap loop.

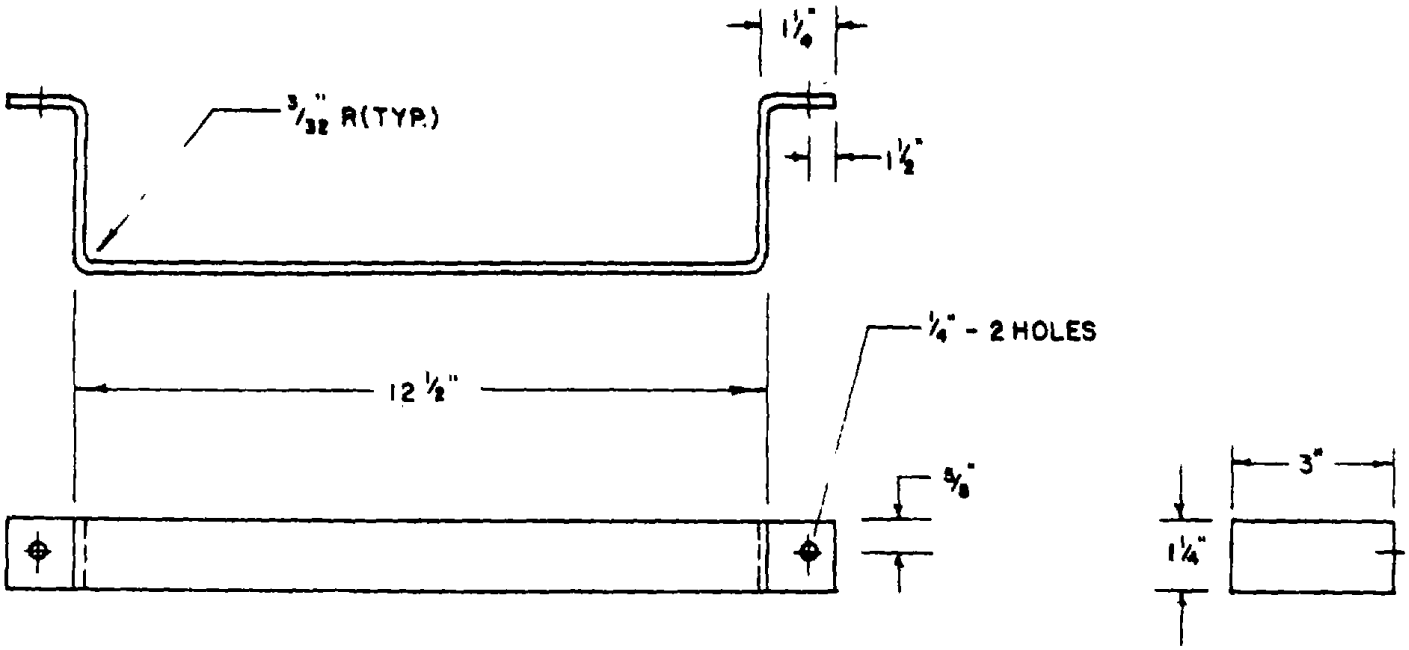
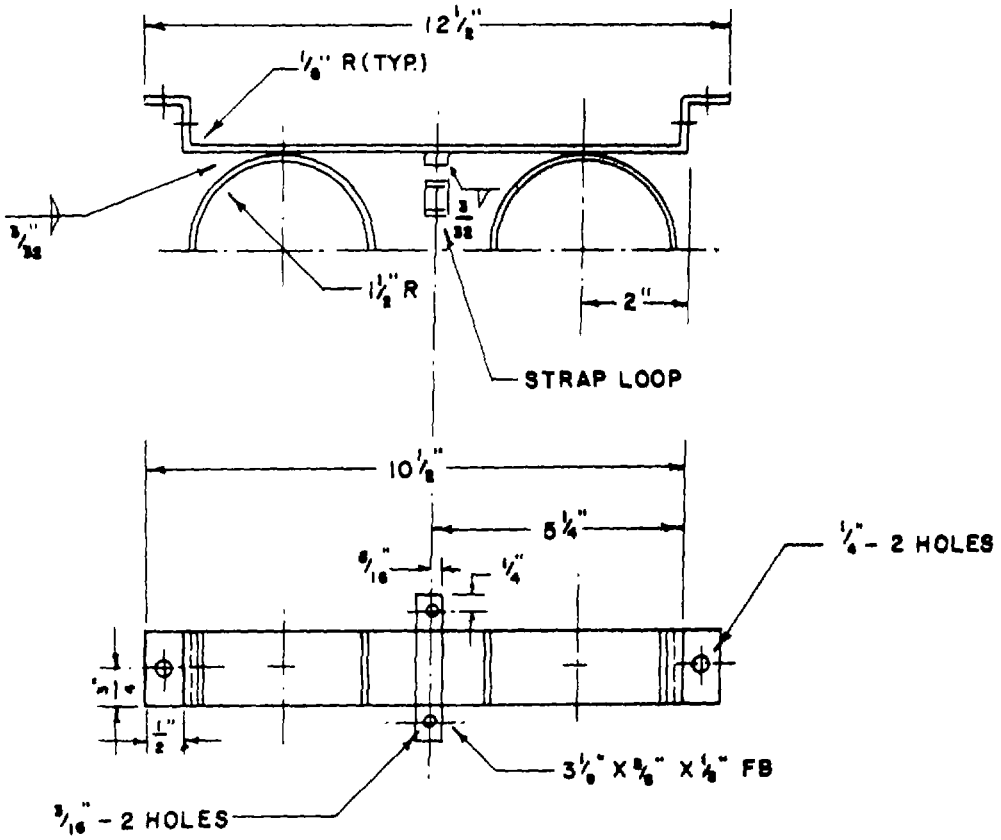


Figure 69. Jack holder base.



TOP JACK HOLDER
1½" X ⅛" ST. FLAT STOCK

Figure 70. Jack holder top.

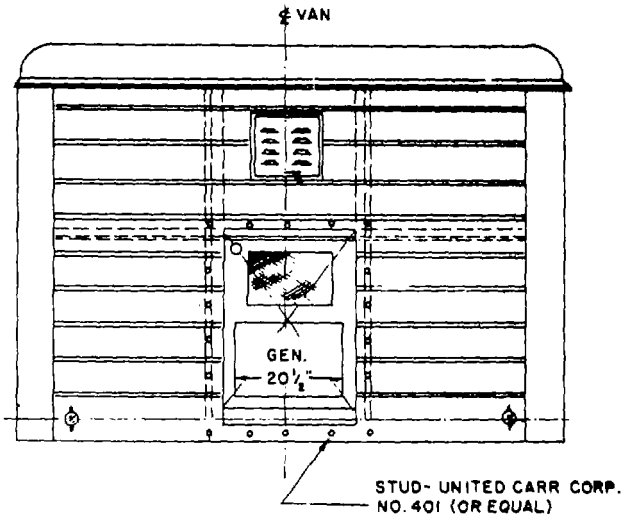


Figure 71. Generator cutout, front wall.

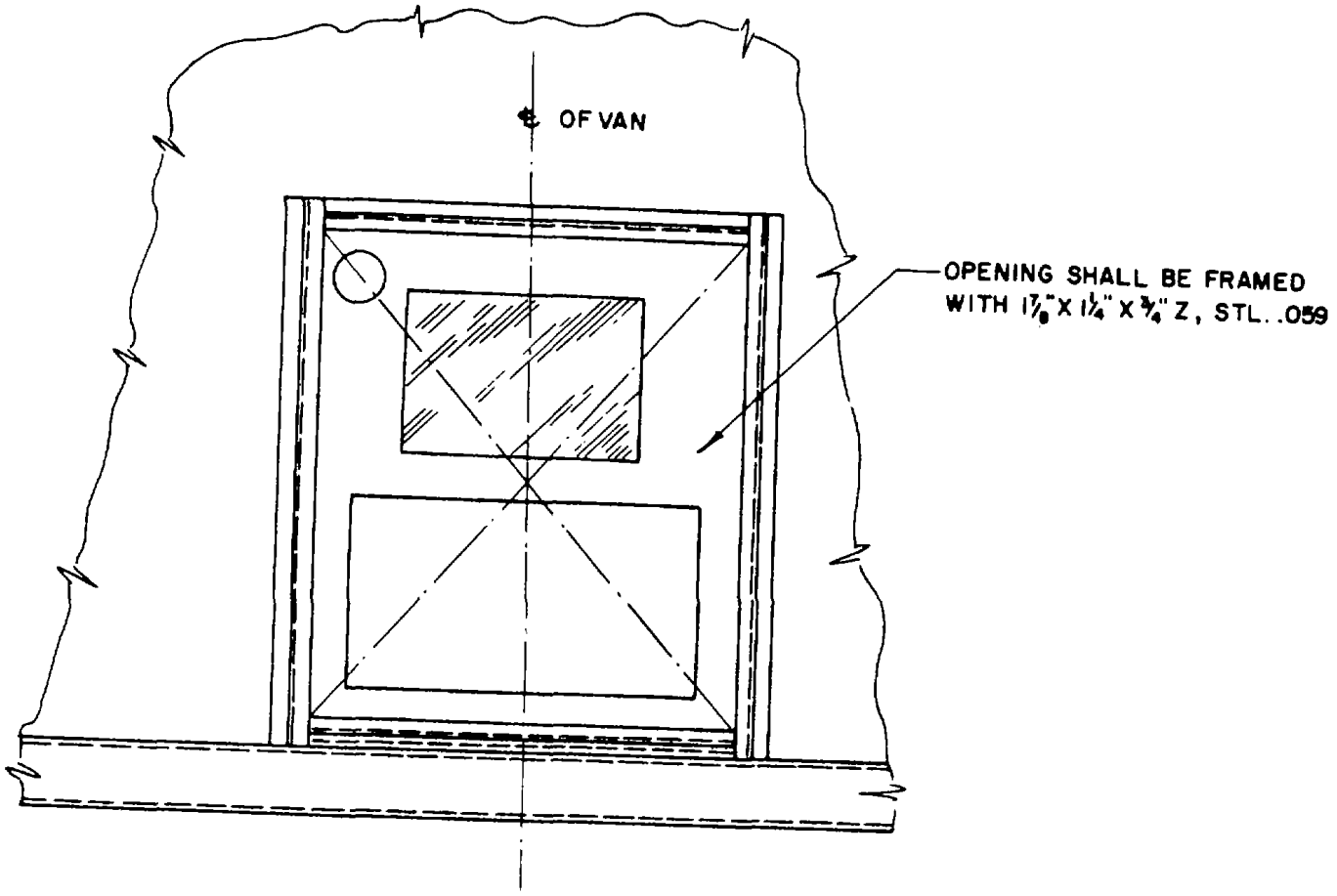


Figure 72. Generator cutout frame.

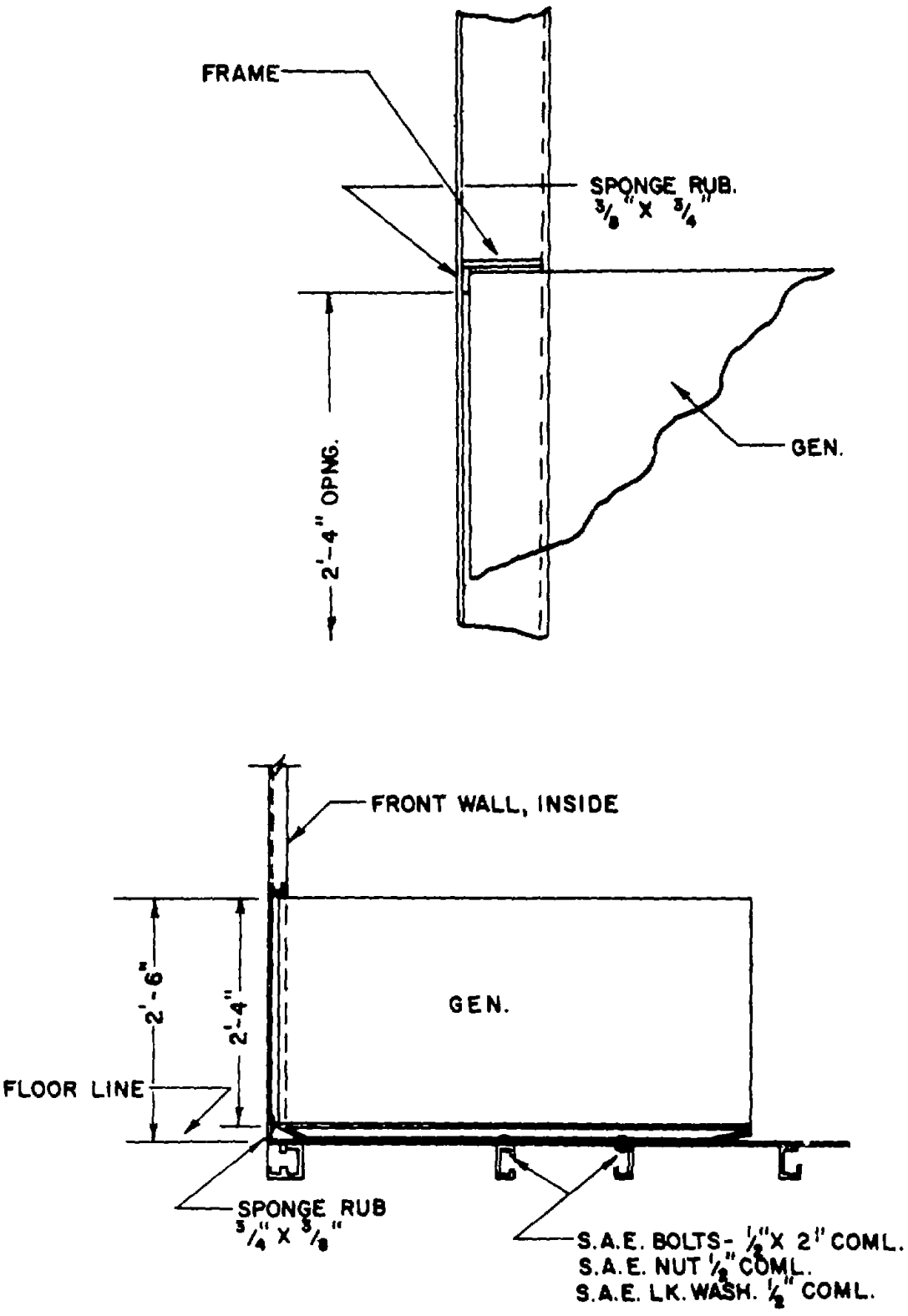


Figure 73. Generator mounting, sectional view.

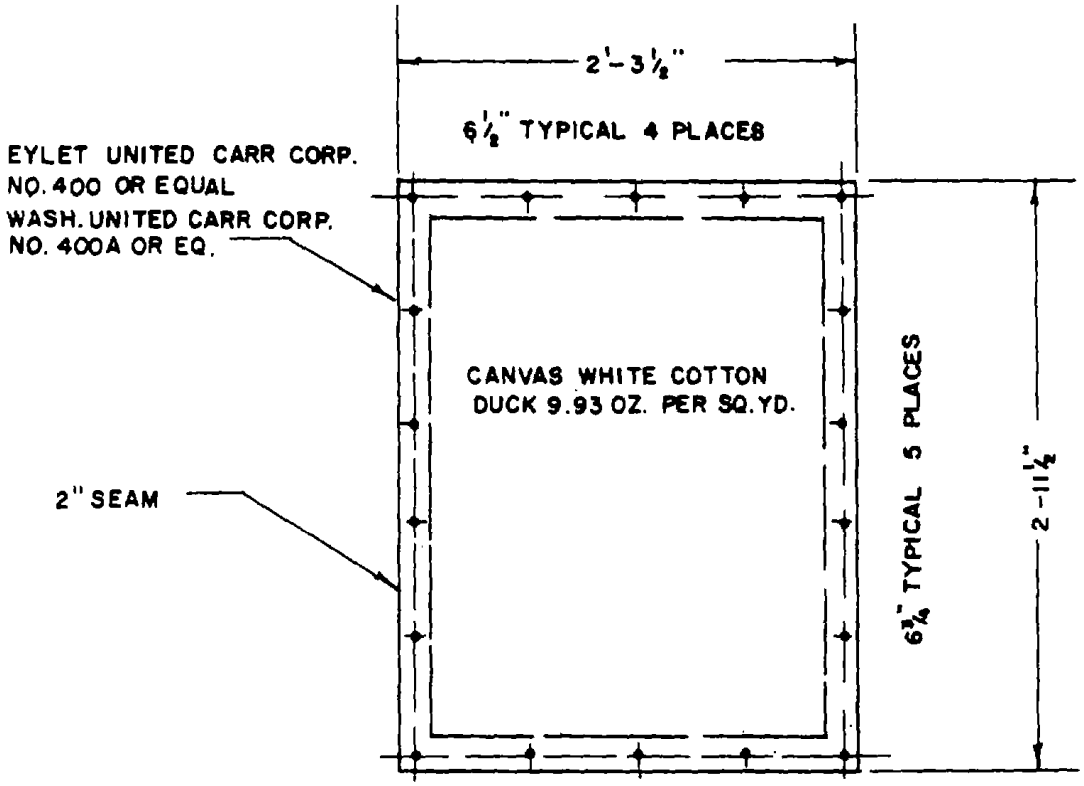


Figure 74. Generator cutout cover.

Section II. CONTROLS AND INSTRUMENTS

138. General

This section describes, locates, illustrates, and furnishes the operator with sufficient information pertaining to the various controls or instruments provided for the proper operation of the equipment.

139. Electric Controls and Instruments

Refer to paragraph 9.

140. Pneumatic Controls and Instruments

Refer to paragraph 105.

CHAPTER 9

MAINTENANCE INSTRUCTIONS (FIELD AND DEPOT MAINTENANCE)

Section I. SPECIAL FIELD DEPOT MAINTENANCE TOOLS AND EQUIPMENT

141. Special Tools and Equipment

Special tools or equipment are not required for field and depot maintenance of the shop set as a unit. Special tools and equipment required for field and depot maintenance of individual items of equipment are listed in the technical for the item.

142. Replacement or Repair Parts

Replacement or repair parts required for field and depot maintenance of the shop set are listed in paragraphs 135 through 137 and 145 through 150.

Section II. LUBRICATION

143. General

Lubrication instructions for the shop set are contained in the lubrication order which is a part of the technical manual for the item of equipment and paragraphs 29 and 30 and 90 and 91.

144. Special Lubrication Instructions

Refer to paragraphs 18 through 26, and 80 through 87 for special lubrication requirements under unusual conditions.

Section III. PREVENTIVE MAINTENANCE SERVICE

145. General

Preventive maintenance services to be performed by field and depot maintenance personnel consist of lubrication, preservation, painting, anodizing, alodizing, and application of rust preventive compounds prior to shipment of an assembled shop set to the using organization.

146. Preventive Maintenance Service at Time of Major Repair

When a shop is returned to field or depot maintenance for major repair, preventive maintenance services performed at time of shipment to the using organization should be repeated as necessary to insure the efficient operation of shop in the field.

147. Cabinet, Base, Storage, Steel, 12-Drawer, Type I

a Repair. Fabrication and assembly of components which may be required for repair and replacement are shown in figures 75 through 81. These components will be fabricated in accordance with these figures when required.

B Disassembly. Disassemble in reverse order of assembly.

c Inspection. Inspect cabinet for sticking drawers, bent or distorted panels, sharp edges, security of assembled details, condition, and wear. Repair or replace components as necessary.

148. Cabinet, Base, Open Bin, Storage, 4 Shelves, Type II

a Repair. Fabrication and assembly of components which may be required for repair and replacement are shown in figures 82 through 88. These components will be fabricated in accordance with these figures when required.

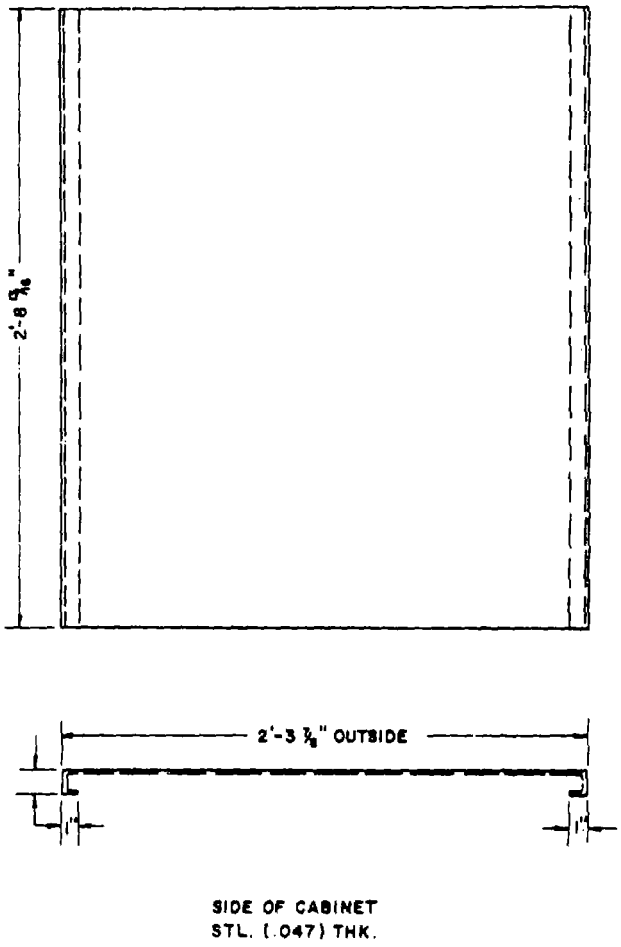


Figure 75. Typical cabinet side, type I.

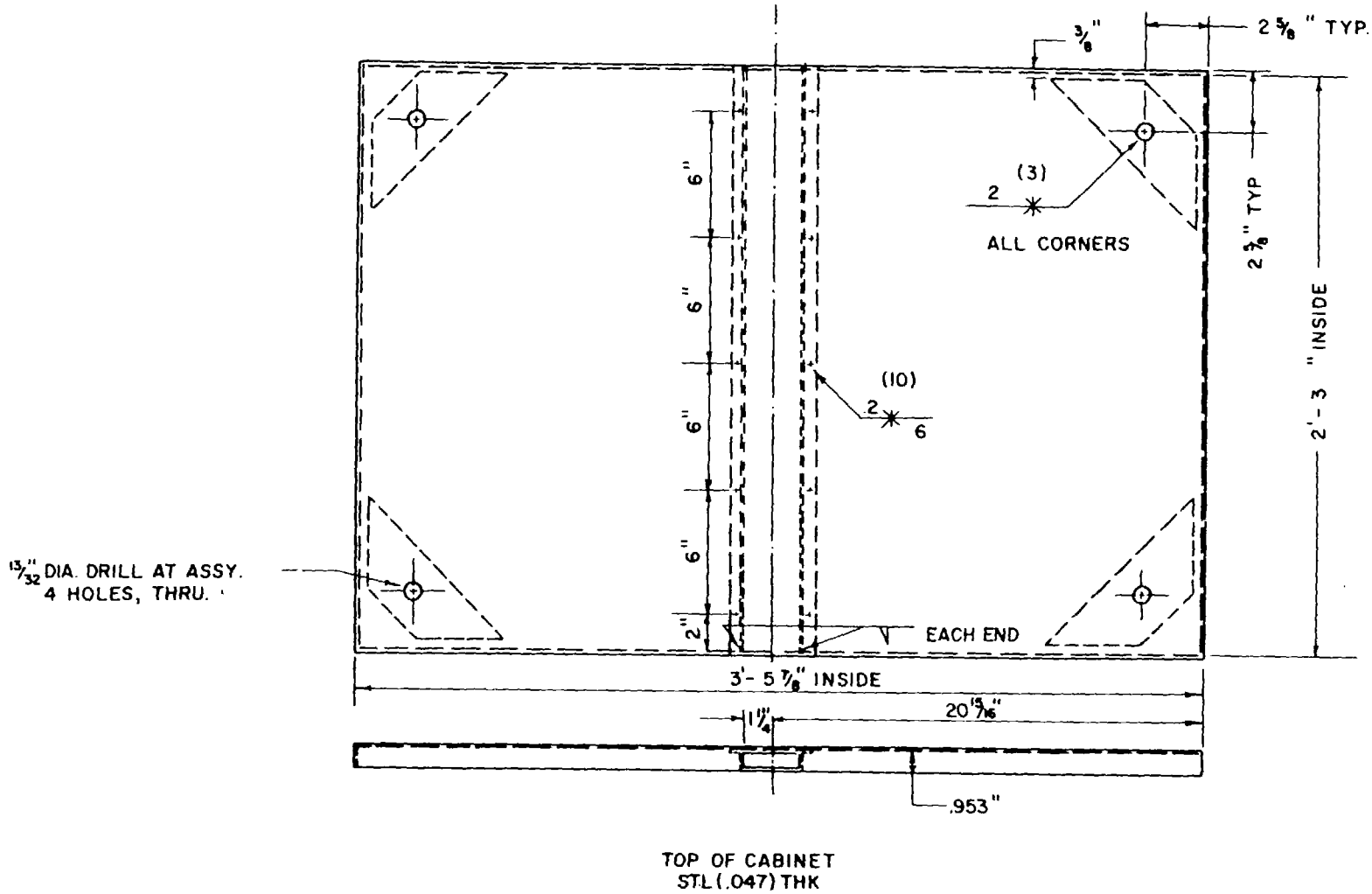


Figure 76. Typical cabinet top, type I.

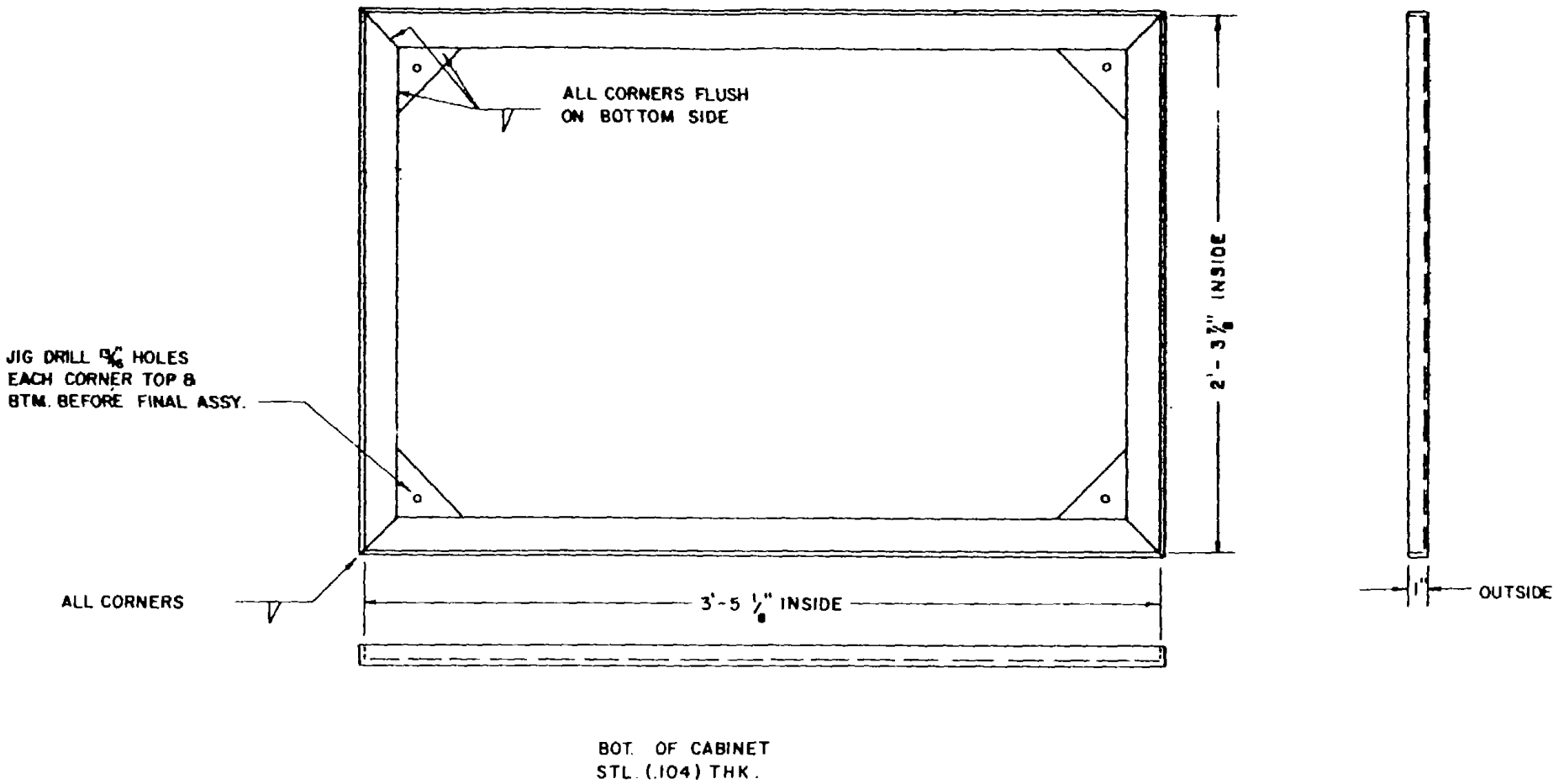


Figure 77. Typical cabinet bottom, type I.

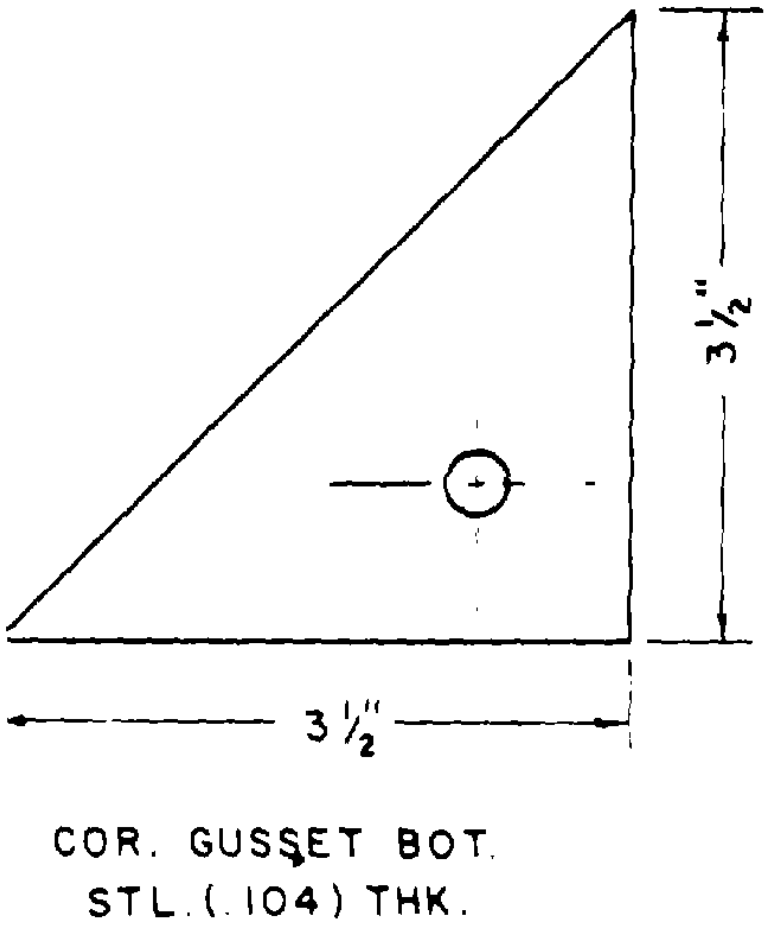


Figure 78. Typical cabinet bottom corner gusset.

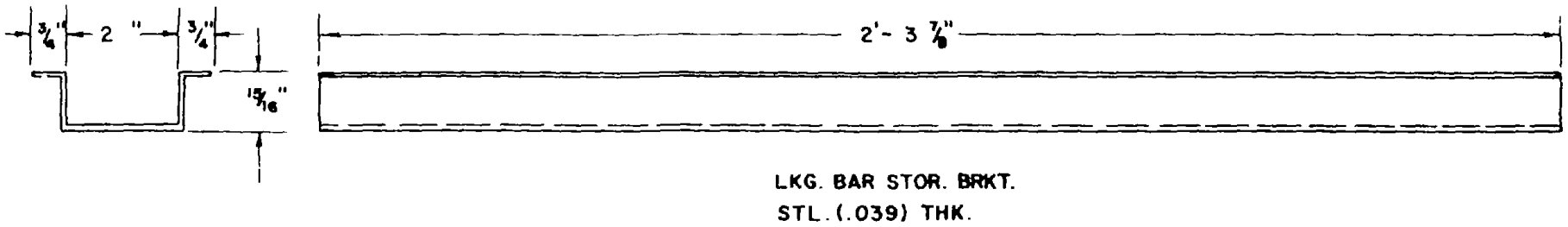


Figure 79. Locking bar storage bracket.

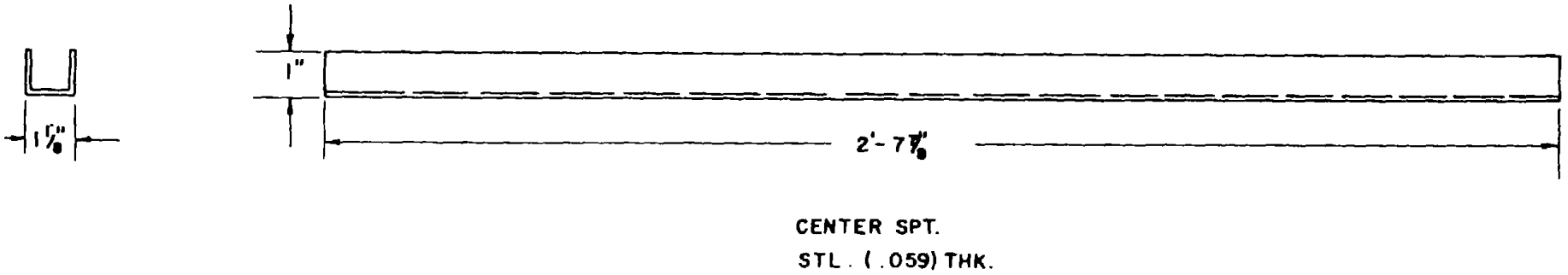


Figure 80. Typical cabinet center support.

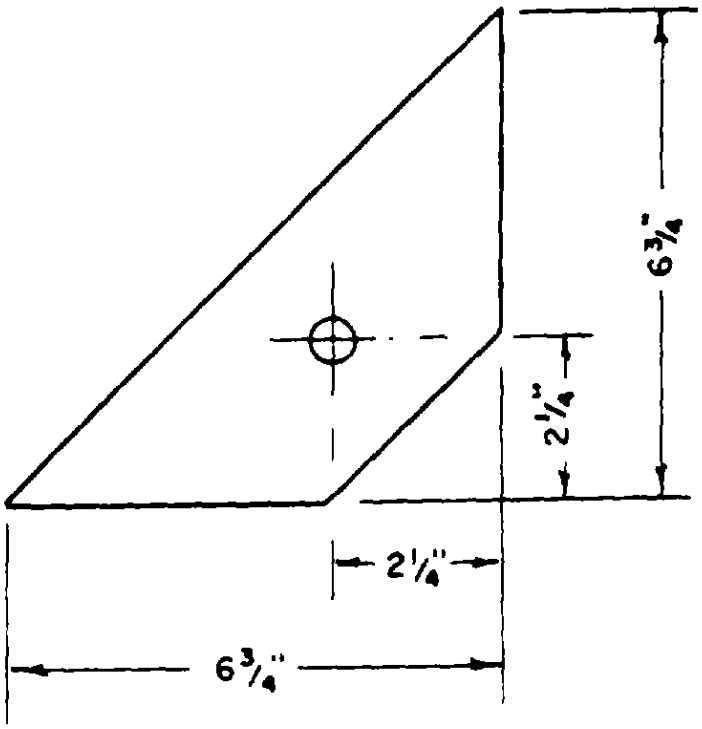
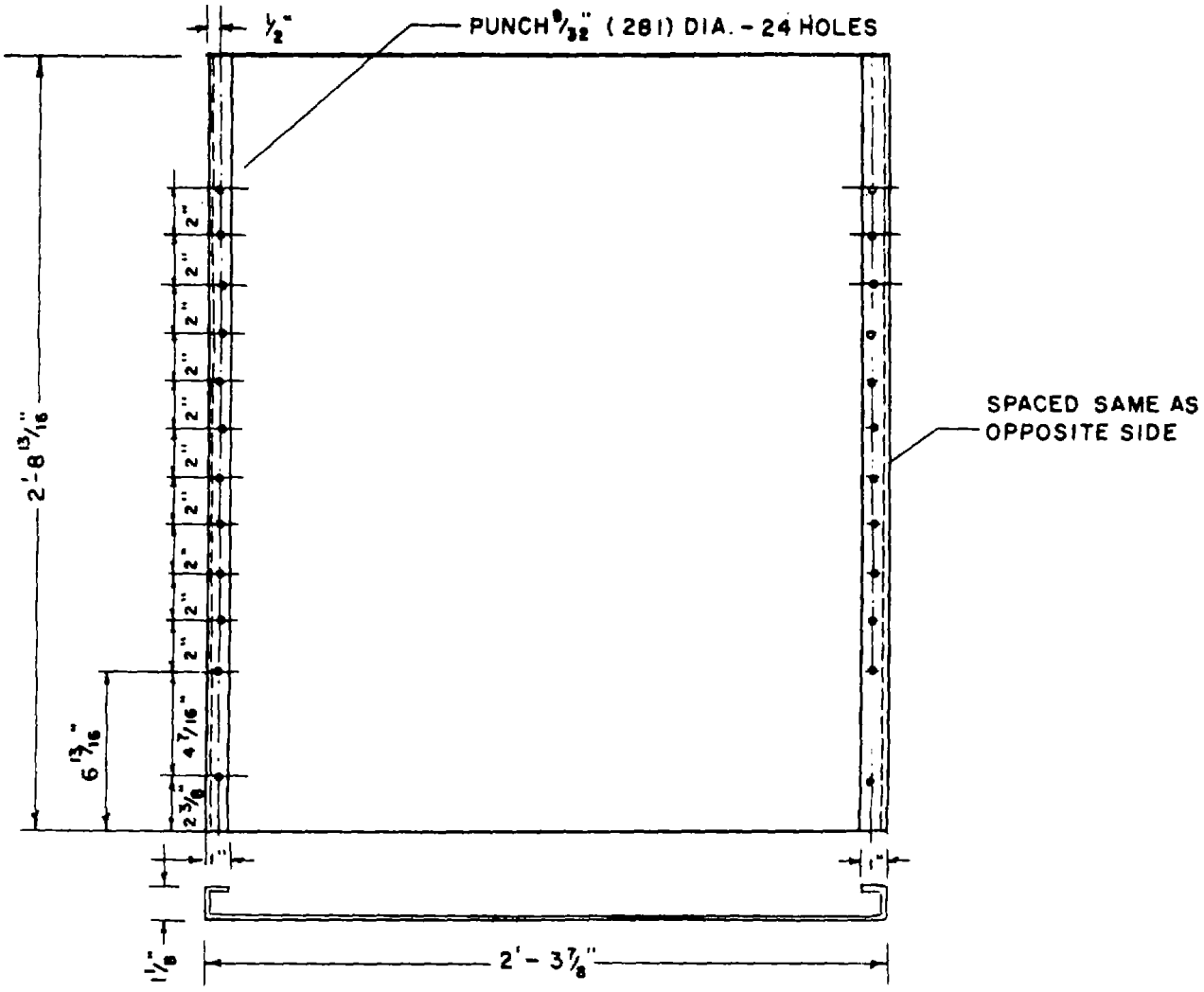
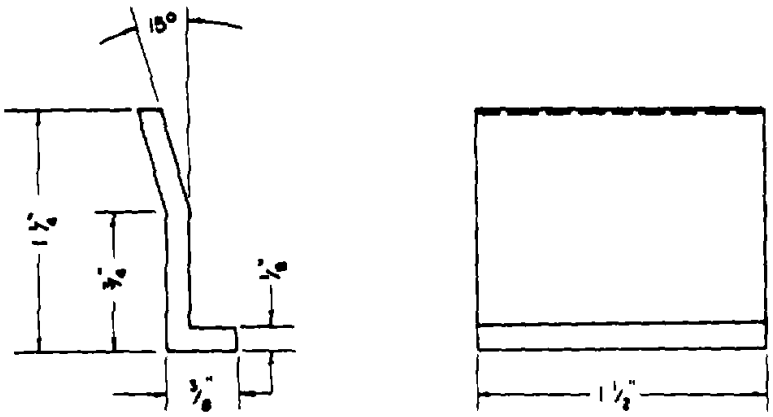


Figure 81. Typical cabinet top gusset.



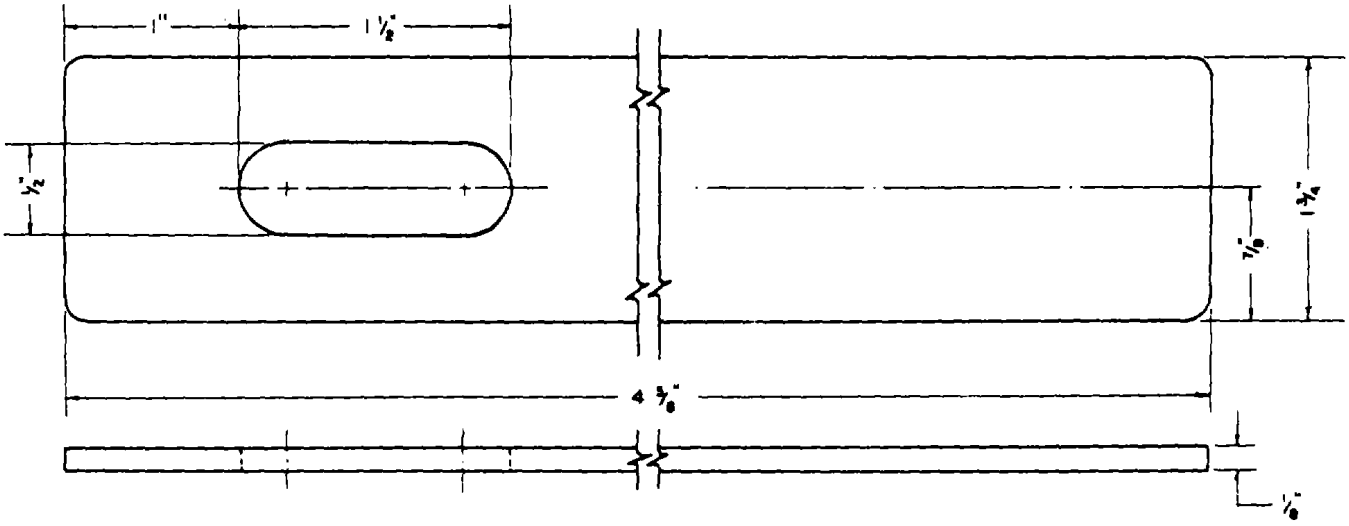
SIDE OF CABINET STL. (047) THK.

Figure 82. Typical cabinet side, type II.



GUARD SUPPORT STL.

Figure 83. Typical cabinet guard support, type II.



STRAP STL.

Figure 84. Typical cabinet steel strap, type II.

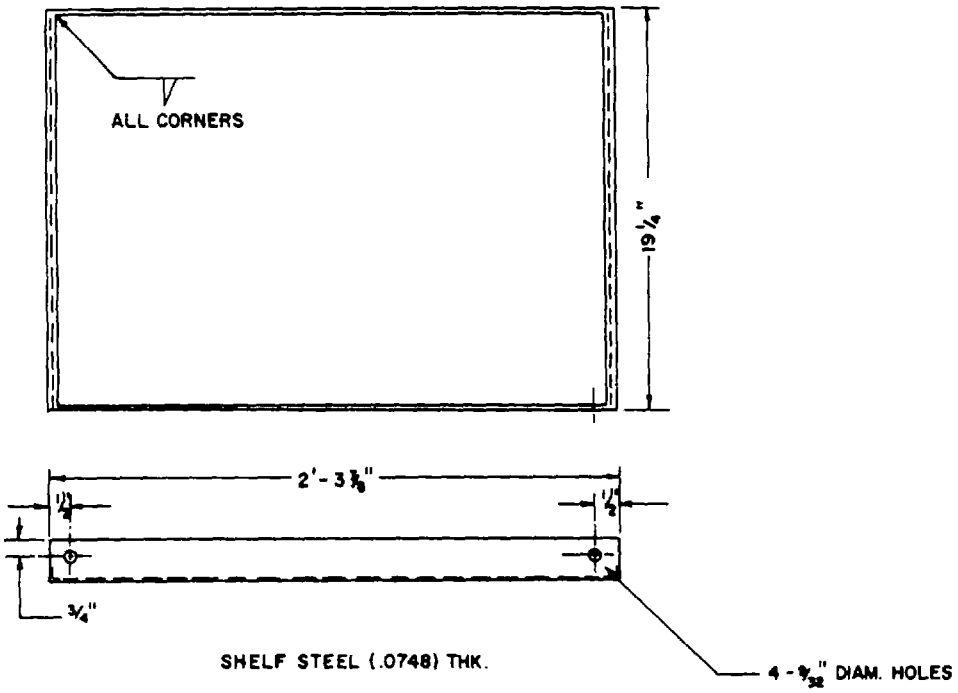


Figure 85. Typical cabinet steel shelf, top view.

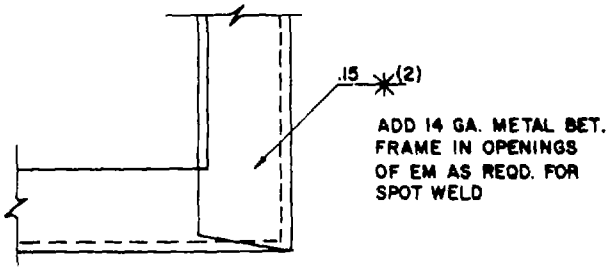


Figure 86. Typical cabinet steel shelf, corner.

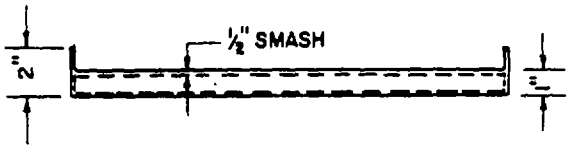


Figure 87. Typical cabinet steel shelf, end view.

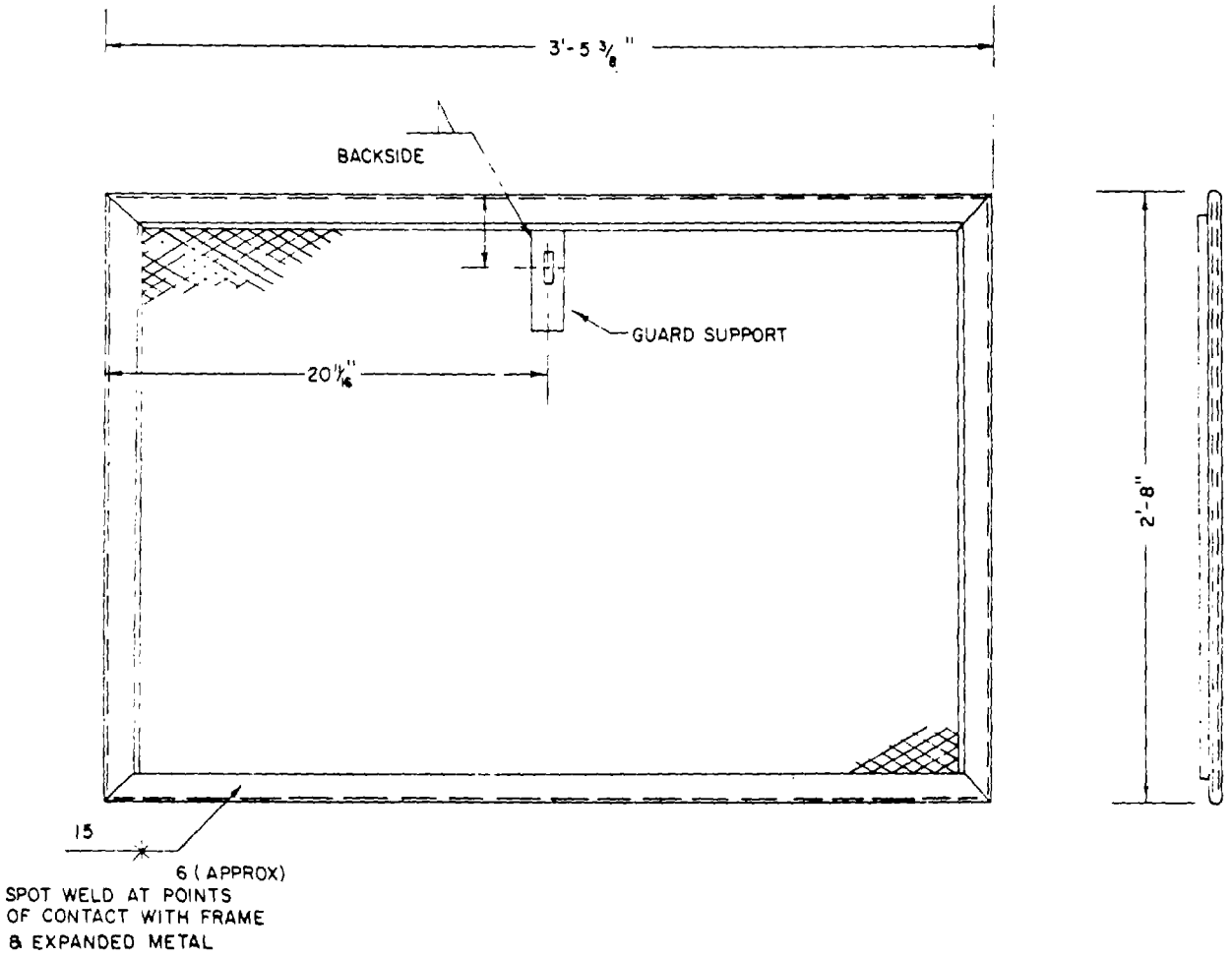


Figure 88. Typical cabinet steel guard, type II.

b Disassembly. Disassemble in reverse order of assembly.

c Inspection. Inspect cabinet for stocking drawers, bent or distorted panels, sharp edges, security of assembled details, condition, and wear. Repair or replace components as necessary.

149. Cabinet, Base, Storage, Steel, 1 Open Bin, 10 Drawers, Type III

a Repair. Fabrication and assembly of components which may be required for repair or replacement are shown in figure 89 through 95 These components will be fabricated in accordance with these figures when required.

b Disassembly. Disassemble in reverse order of assembly.

c Inspection. Inspect cabinet for sticking drawers, bent or distorted panels, sharp edges, security of assembled details, condition, and wear. Repair or replace components as necessary.

150. Bench Tops, Size A, C, and D.

a Repair. Fabrication and assembly of components which may be required for repair or replacement will be on an "as required" basis.

b Inspection. Inspect for nicks, scratches, gouges, condition and wear. Repair or replace as necessary.

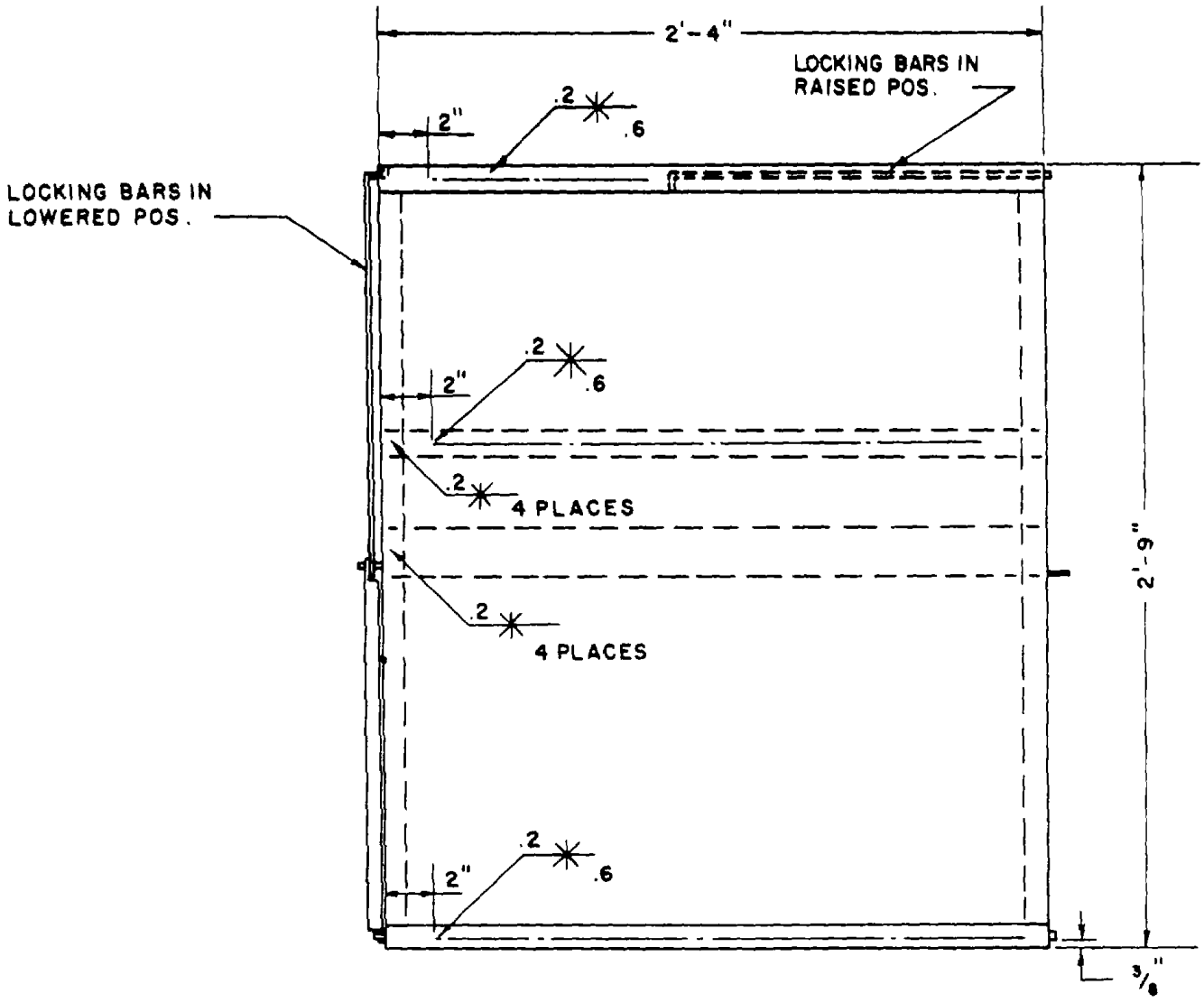


Figure 89. Typical cabinet side, type III.

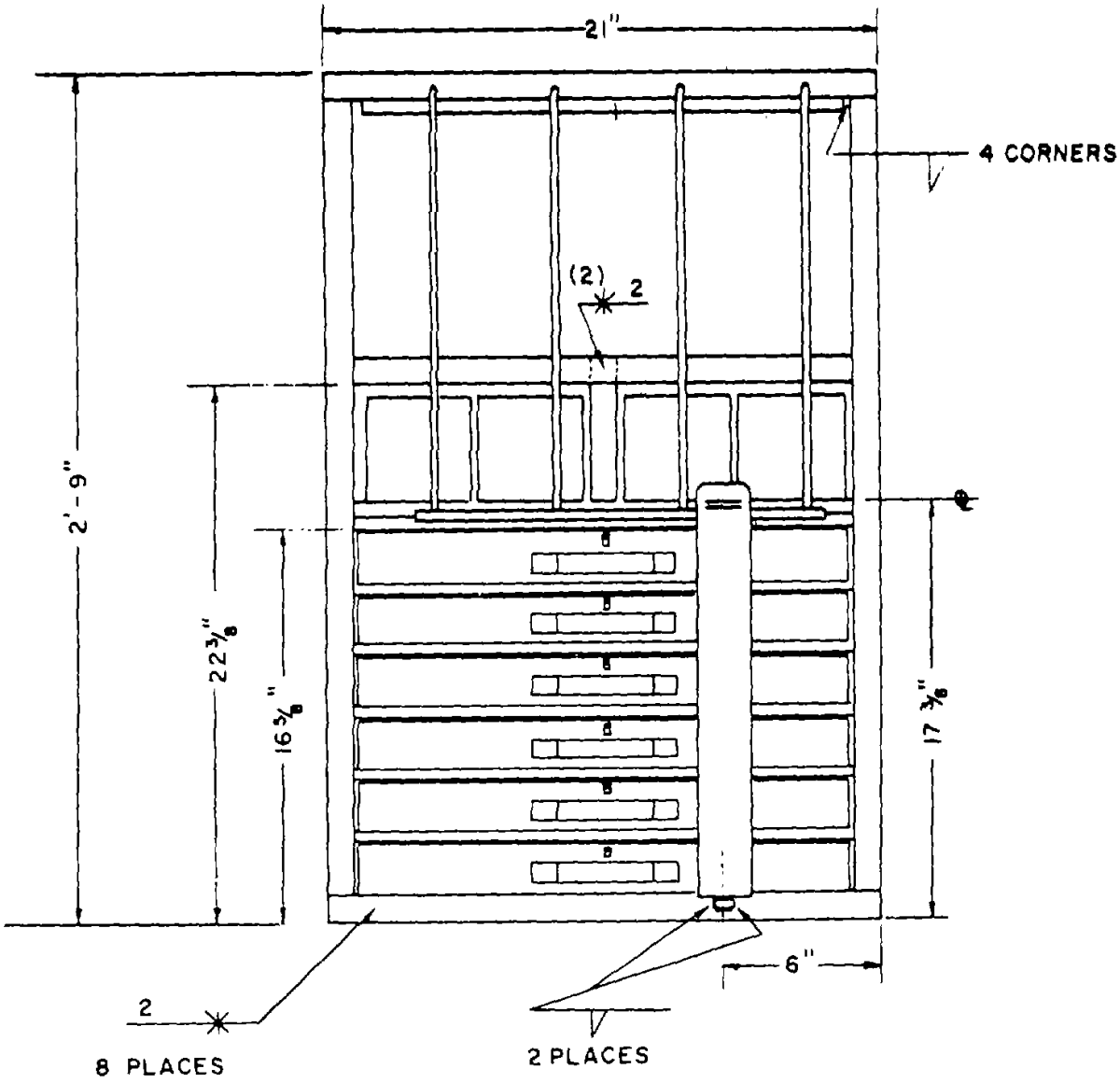


Figure 90. Front view, cabinet, type III.

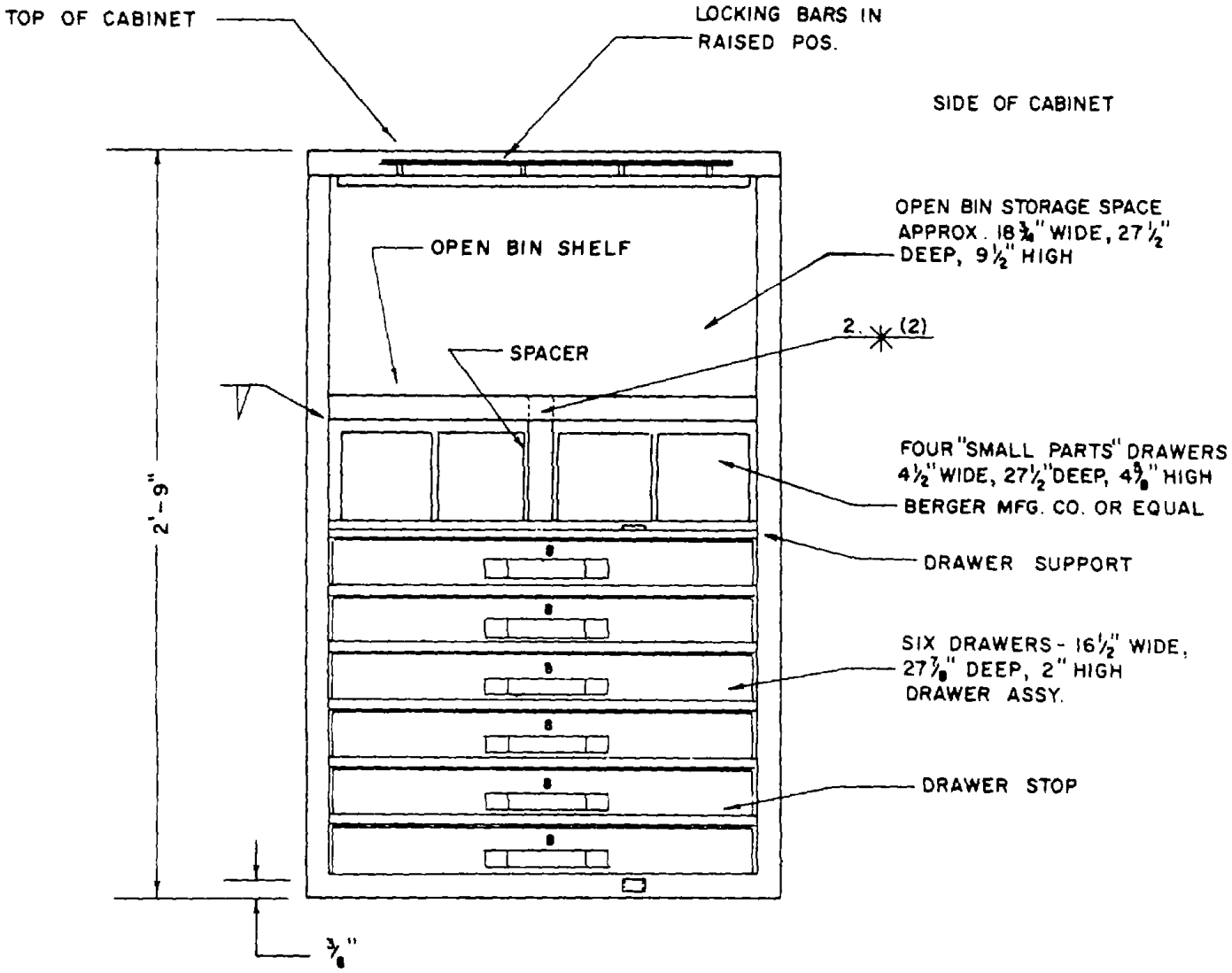


Figure 91. Rear view, cabinet, type III.

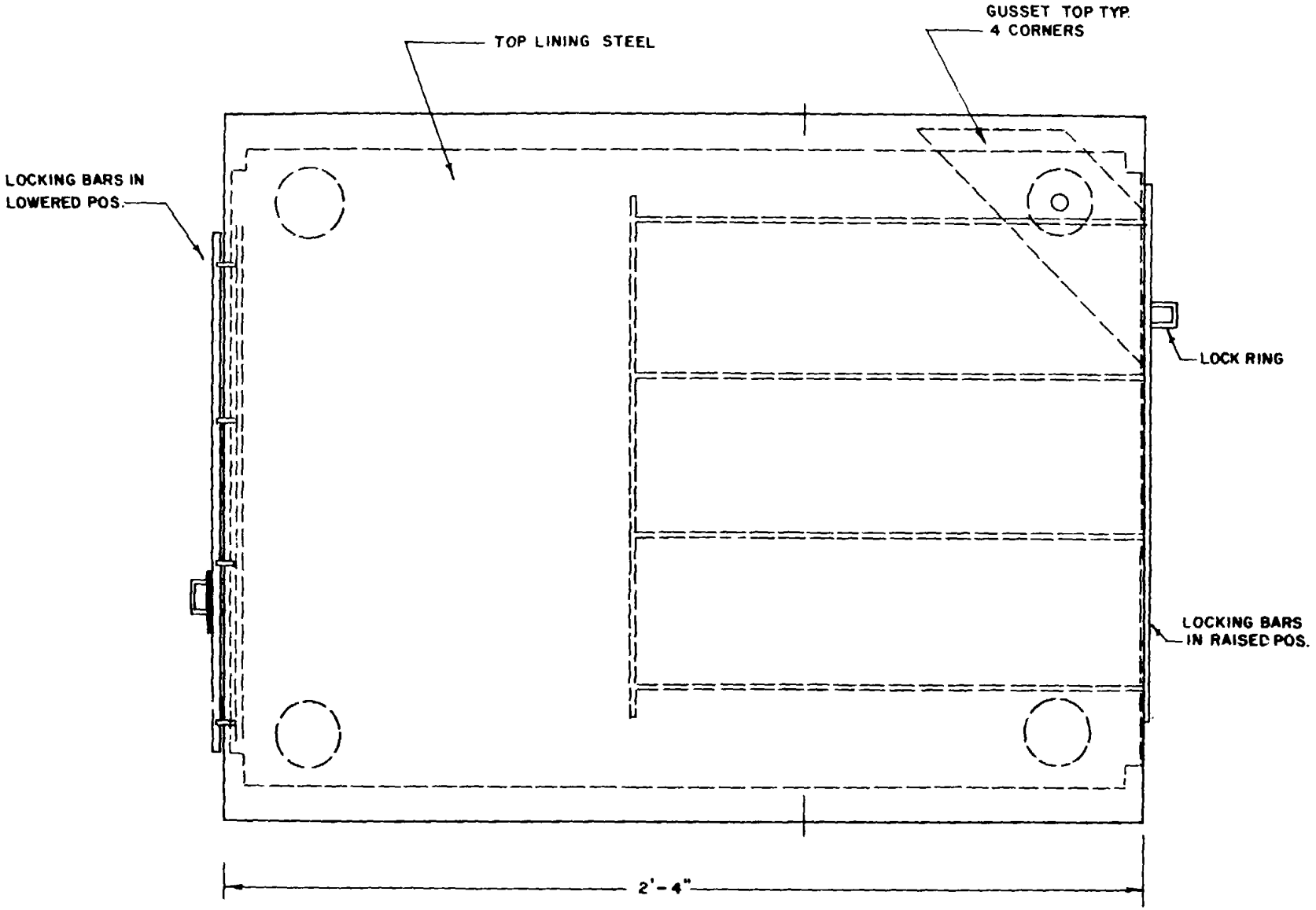


Figure 92. Top view, cabinet, type III.

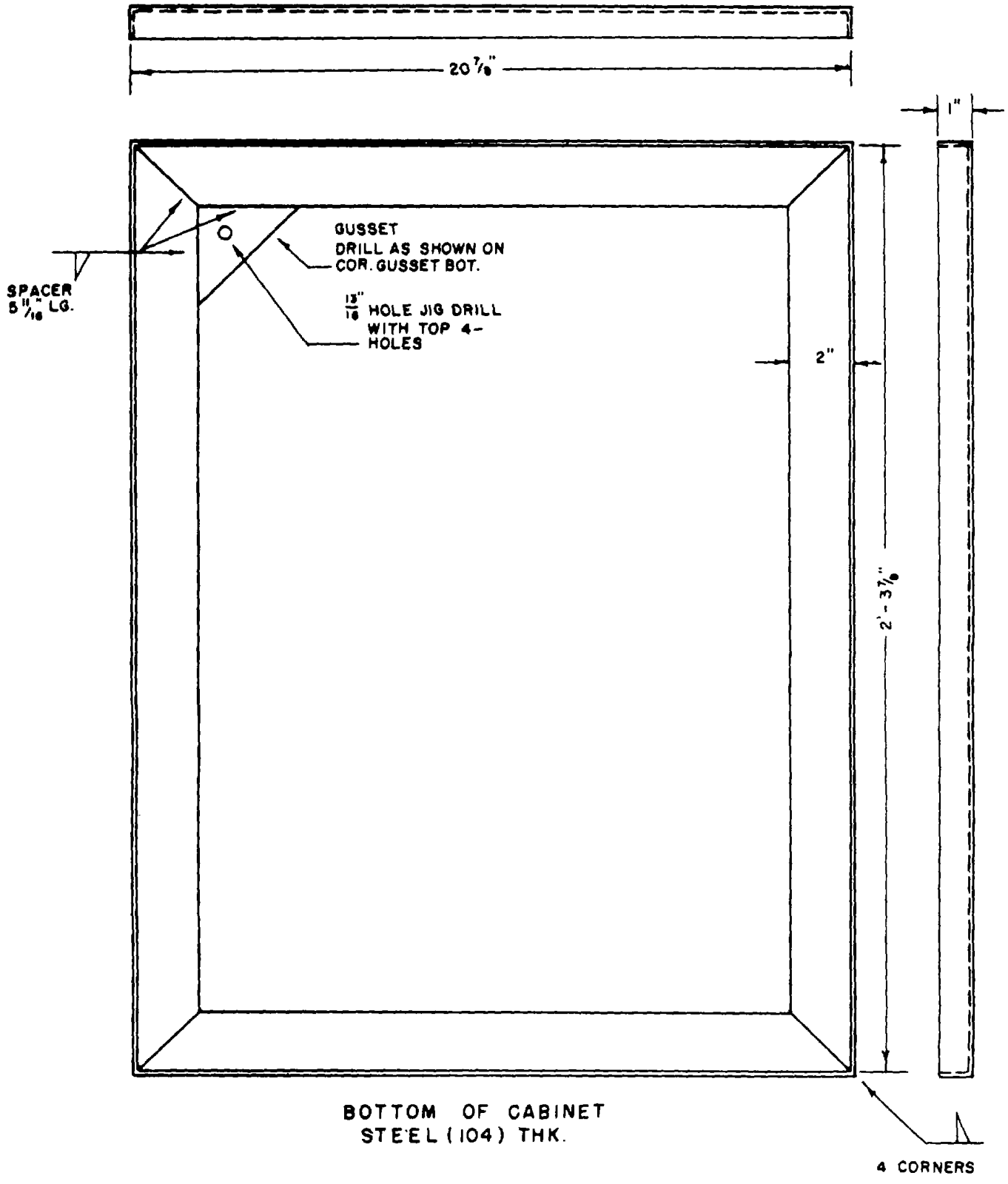


Figure 93. Bottom view, cabinet, type III.

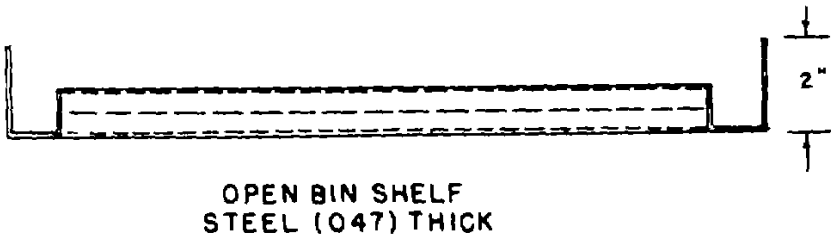


Figure 94. Open bin shelf, type III, front view.

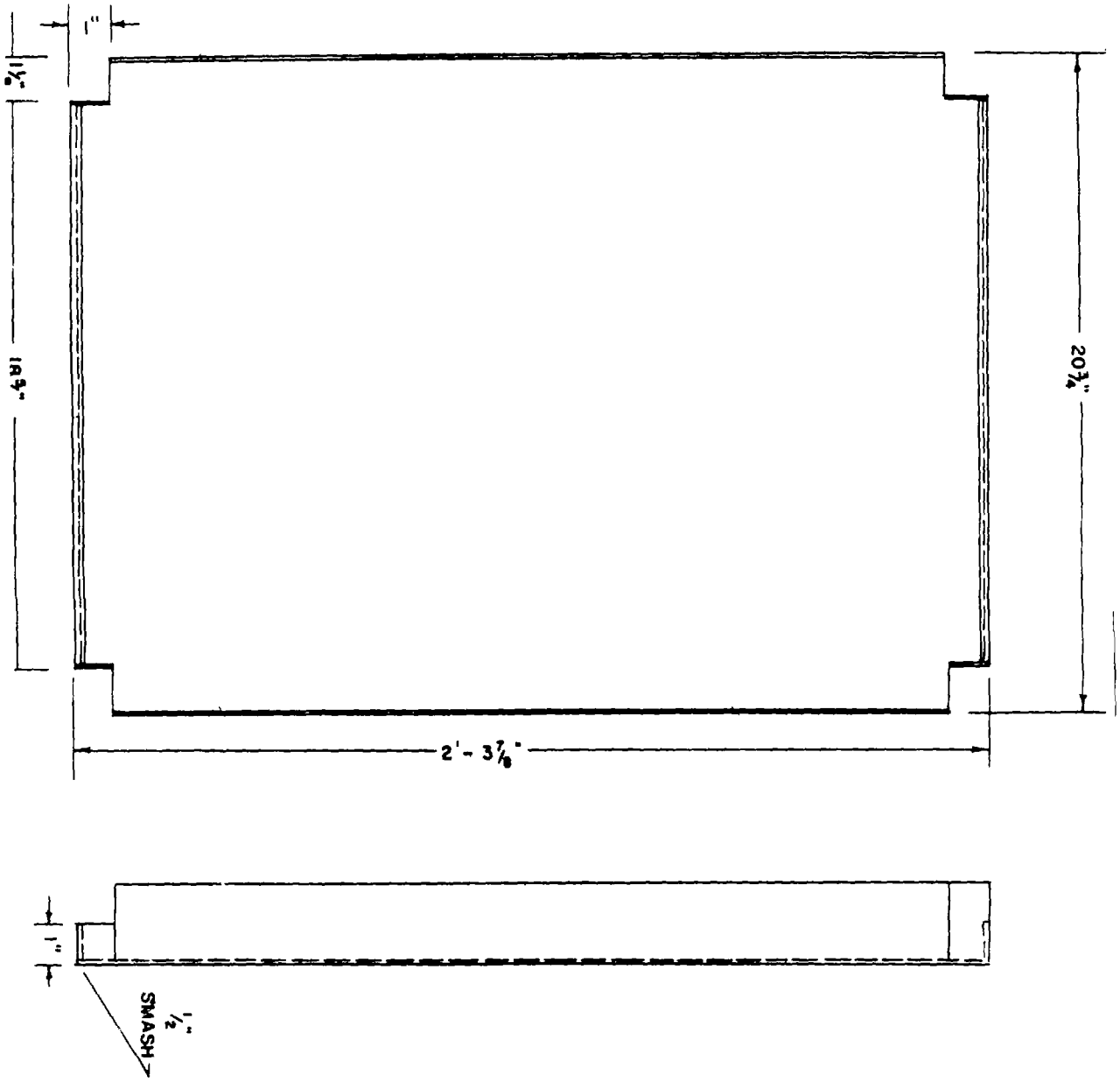


Figure 95. Open bin shelf, type III, top and side view.

Section IV. TROUBLESHOOTING

151. General

This section contains troubleshooting information useful to field and depot maintenance personnel in diagnosing and correcting unsatisfactory operation or failure of the shop set or any of its components.

152. Procedure

Troubleshooting is a systematic isolation of defective components by means of an analysis of the shop set trouble symptoms, testing to determine the defective component, and applying the remedy. To correct malfunctioning of equipment, the probable cause should be systematically isolated in accordance with instructions in the following paragraphs.

153. Electrical Equipment Operates at Slow or Reduced Speed

Probable cause	*Possible remedy*
Internal break in conductor inside conduit.	Remove wire from conduit), splice or replace.
Improper grounding	Inspect for corrosion at ground connection-repair or replace as necessary.
Contact points of circuit breaker dirty or corroded	Clean points, reinstall circuit breaker.
Improper connections in control panel	Check control panel; reposition leads (fig. 6).

154. Electrical Equipment Stops During Operation

Probable cause	*Possible remedy*
Broken power cord	Remove power ,cord; inspect, repair, or replace.
Circuit breaker burned out.	Replace circuit breaker.
Short circuit in system	Check system with volt-ohm meter, repair short circuit.

155. Electrical Equipment Will Not Start

Probable cause	*Possible remedy*
External power receptacle inoperative	Replace receptacle.
Power cord broken	Repair or replace power cord.
Circuit breaker burned out	Replace circuit breakers.
Safety disconnect switch contacts corroded	Clean contacts.

156. Pneumatic Equipment Operates at Slow or Reduced Speed

Probable cause	*Possible remedy*
Partial stoppage in air lines or hose	Remove obstruction from air line or hose.
Damage air line	Replace air line.
Controls stuck	Repair or replace controls.

157. Pneumatic Equipment Stops During Operation

Probable cause	*Possible remedy*
Obstruction in air lines	Remove obstruction.
Broken air lines	Replace lines.

158. Pneumatic Equipment Will Not Start

Probable cause	*Possible remedy*
Air compressor not functioning correctly	Refer to air compressor TM for procedure.
Check valves inoperative	Repair or replace check valves.
Controls stuck	Repair or replace controls.

159. Excessive Vibration of Equipment

Probable cause	*Possible remedy*
Broken mountings	Replace mountings.
Equipment improperly mounted	Remount equipment correctly.

160. Excessive Noise

Probable cause	*Possible remedy*
Mountings not secure	Re-position and secure mounts.
Equipment assembled improperly	Reassemble correctly.

Section V. ELECTRICAL SYSTEM

161. General

Refer to Chapter 6, Section VI, for detailed description of the electrical system.

162. Electrical Generator

Field and depot maintenance responsibilities for the generator are listed in the TM for the generator.

163. Electrical System, Electrically Driven Air Compressor

Field and depot maintenance responsibilities for the electrical system of the air compressor are listed in the technical manual for the compressor.

164. Electrical Wiring Installation

Field and depot maintenance personnel are responsible for performing tests and correcting discrepancies in the electrical wiring system as authorized by Appendix II. Refer to Chapter 9, Section IV, for troubleshooting procedures. Detailed description of electrical wiring system is listed in Chapter 6, Section VI.

165. Electrical Switches and Circuit Breakers

Refer to chapter 6, section VI, for description of circuit breakers and switches. Field and depot maintenance personnel maintenance responsibilities consist of testing, or replacing switches and circuit breakers in accordance with appendix II. Refer to chapter 9, section IV, for troubleshooting procedures and to chapter 8, for a list of spare parts.

166. Lighting System

Refer to paragraphs 106 through 112 for description of lighting system. Field and depot maintenance responsibilities consist of testing, or replacing defective components of lighting system in accordance with appendix II.

Section VI. PNEUMATIC SYSTEM

167. General

A description of the pneumatic system is contained in paragraphs 113 through 117.

168. Air Compressor

Field and depot maintenance of the air compressor consists of mounting in accordance with instructions in paragraphs 135 through 140 and testing in accordance with the technical manual for the compressor. Repair or replacement mounting parts are listed in Chapter 8.

169. Air Supply Tank

Field and depot maintenance to the air supply tank consists of mounting in accordance with instructions in chapter 8, and testing in accordance with instructions in the technical for the compressor.

170. Lines and Hose

Field and depot maintenance of air lines and hose consists of mounting, testing, repair, and replacement. Refer to chapter 9, section IV, for troubleshooting procedures.

171. Controls and Instruments

Field and depot maintenance of controls and instruments consists of mounting in accordance with chapter 8, and testing in accordance with the applicable technical manual.

Section VII. UTILITY SYSTEM

172. General

Field and depot maintenance responsibilities for the utility system are listed in paragraphs 145 through 150.

173. Parts

Repair or replacement parts for the utility system are listed in chapter 9, section III.

APPENDIX I

REFERENCES

1. Publication Indexes

Department of the Army pamphlets of the 310 series should be consulted frequently for the latest changes or revision of references given in this appendix and new publications relating to the material covered in this manual.

2. Technical Manual

(Applicable to Van M447)

TM 9-2330-238-14	Operator's Organizational, and field maintenance manual: Chassis, semitrailer: 6-ton, 4-wheel, M295A1 (2380-649-8124) and semitrailer, van: shop, folding sides, 6-ton, 4-wheel, M447 (2330-5425709).

3. Lubrication Order

(Applicable to Van M447)

LO 9-2330-238-10	Chassis, semitrailer: 6-ton, 4-wheel, M295A1: semitrailer, van, shop, folding sides, 6-ton, 4-wheel, M447.

4. Army Regulations

AR 700-38	Unsatisfactory equipment report.
AR 700-58	Report of damaged improper shipment.
AR 750-6	Maintenance planning, allocation and coordination.
AR 385-series	Army safety policy.

5. Supply Manual

SM 55-4-4920-S36	Shop Set, Aircraft Maintenance, Semitrailer Mounted, C-2, Electrical Shop. (FSN 4920-621-2040)

6. Indexes and Forms

DA Pam 310-1	Index of Administrative Publications.
DA Pam 310-2	Index of Blank Forms.
DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Bulletins, Lubrication Orders and Modification Work Orders.
DA Pam 310-22	Index of Supply Manuals Transportation Corps.
DA Form 460	Preventive Maintenance Roster.
DA Form 468	Unsatisfactory Equipment Report.
DD Form 6	Report of Damaged or Improper Shipment.
DD Form 314	Preventive Maintenance Schedule and Record.

APPENDIX II

MAINTENANCE ALLOCATION

1. Purpose

The maintenance allocation chart provides all activities with a description of maintenance functions-to be performed at each echelon of maintenance.

2. Definitions of Terms

a. Service. To clean, preserve, and replenish field and lubricants.

b. Adjust. To regulate periodically to prevent malfunction.

c. Inspect. To verify serviceability and to detect incipient electrical or mechanical failure by scrutiny.

d. Test. To verify serviceability and to detect incipient electrical or mechanical failure by use of special equipment such as gages, meters, etc.

e. Replace. To substitute serviceable assemblies, subassemblies, and : parts for unserviceable components.

f. Repair. To restore to a serviceable condition by replacing unservicable parts or by any other action required, utilizing tools, equipment, and skills available to include welding, grinding, riveting, straightening, adjusting, etc.

g. Rebuild. To restore to a condition comparable to new by disassembling the item to determine the condition of each of its component parts and reassembling it using serviceable, rebuilt, or new assemblies, subassemblies, and parts.

h. Minor disassembly. That disassembly where only subassemblies are removed, not entire system, and replacement does not require alinement.

Maintenance Allocation Chart

COMPONENTS AND RELATED OPERATIONS	1st echelon	2nd echelon	3rd echelon	4th echelon	5th echelon	Spec. tools req'd
ELECTRICAL:						
CIRCUIT BREAKERS:						
Service	X					
Adjust	X					
Inspect	X					
Test	--	X				
Replace	--	--	X*			
Repair	--	--	--	X		
Rebuild	--	--	--	--	X	
WIRING:						
Service	X					
Test	--	X				
Inspect	X					
Replace	--	--	X*			
Repair	--	--	X			
Rebuild	--	--	--	--	X	
PNEUMATIC:						
AIR SUPPLY SYSTEM:						
Service	X					
Adjust	X					
Inspect	X					
Tests	--	X				
Replace	--	--	X*			
Repair	--	--	--	X		
Rebuild	--	--	--	--	X	
UTILITY:						
CABINETS:						
Service	X					
Adjust	X					
Inspect	X					
Replace	--	X				
Repair	--	--	X			
Rebuild	--	--	--	--	X	

*Only those items requiring minor disassembly.

BY ORDER OF THE SECRETARY OF THE ARMY:

G. H. DECKER,
General, United States Army,
Chief of Staff.

Official:

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

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☆ US. GOVERNMENT PRINTING OFFICE: 1993 - 342-421/80401

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PREVIOUS EDITIONS ARE OBSOLETE.

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 decagram = 10 grams = .35 ounce
1 hectogram = 10 decagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
pound-inches	Newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

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