DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATOR, ORGANIZATIONAL, FIELD, AND DEPOT MAINTENANCE MANUAL SHOP SET, AIRCRAFT MAINTENANCE, SEMITRAILER MOUNTED, SET C-8, INSTRUMENT SHOP

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

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Operator, Organizational, Field,
and Depot Maintenance Manual

SHOP SET, AIRCRAFT MAINTENANCE, SEMITRAILER
MOUNTED, SET C-8, INSTRUMENT SHOP

TM 55-4920-217-15, 9 October 1961, is changed as follows:

Page 33. Paragraphs 54 and 55 are superseded as follows:

54. Purpose

This chapter furnishes the operator with sufficient information for preparation of the equipment comprising Shop Set, Aircraft Maintenance, Semitrailer Mounted, C-8, Instrument Shop for shipment and limited storage.

55. 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 58 through 61 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. 55-4920-217-15

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DEPARTMENT OF THE ARMY
WASHINGTON 25, D.C., *9, October 1961*

Operator, Organizational, Field, and Depot Maintenance Manual

SHOP SET, AIRCRAFT MAINTENANCE, SEMITRAILER MOUNTED, SET C-8, INSTRUMENT 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, detailed 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 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 the purpose of cleaning, lubricating, or replacing spare 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. 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 Materials. 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 700-38, using DA Form 468 (Unsatisfactory Equipment 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 failures or unsatisfactory design or material. However, reports will always be made when exceptionally costly equipment is involved. Refer also to AR 700-38, and the printed instructions on DA Form 468.

Section II. DESCRIPTION AND DATA

4. Description

a. General. Shop Set, Aircraft Maintenance, Semitrailer Mounted, C-8, Instrument Shop consists of a semitrailer mounted van and necessary tools and equipment for an Army aviation field maintenance shop, operating in the field, performing the functions of an instrument facility. The shop set contains 3 systems; electrical, pneumatic, and utility.

(1) *Electrical system.* Electrical power is supplied by an auxiliary source. An external power receptacle, designed to accommodate a plug attached to the auxiliary power cord, is mounted at the right rear corner of the van. The external power receptacle feeds directly to the electric control panel (fig. 4), which is provided to distribute the power source to the point of use. The electric control panel is mounted in the right rear interior corner of the shop. The control panel contains 14 thermal-magnetic circuit breaker which serve as distribution centers for the current supplied to the equipment of the shop. A receptacle is provided to furnish current for small electrically operated tools.

(2) *Pneumatic system, semitrailer mounted shop set.* The air compressor (fig. 10), is electrically driven with a 5 cfm capacity at 175) psi. The compressor and air storage tanks are mounted separately (figs. 18 and 19). Air lines are installed (figs. 11, 12, and 14), 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. 5), 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. 13), 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 21 inch, maple bench top; 1 each, 1 3/4 x 30 x 42 inch, maple bench top; 1 each, 1 3/4 x 30 x 63 inch maple bench top; 1 each, 1 3/4 x 30 x 84 inch, maple bench top; 2 each, 33 x

28 x 42 inch, 4-shelf storage cabinets; 2 each, 33 x 28 x 21 inch, 10-drawer storage cabinets; and 3 each, 33 x 28 x 42 inch, 12-drawer storage cabinets. The maple bench tops are used as working surfaces and for storing hand tools and small items of equipment (pars. 128 through 130).

b. Identification. Identification and instruction markings are listed in figures 1, 2, and 8.

c. List of Components. A list of the components is contained in SM 55-4-4920-S42.

d. Deviation in Models. This manual applies only to Shop Set, Aircraft Maintenance, Semitrailer Mounted, C-8, Instrument Shop, as defined in SM 55-4-4920-S42.

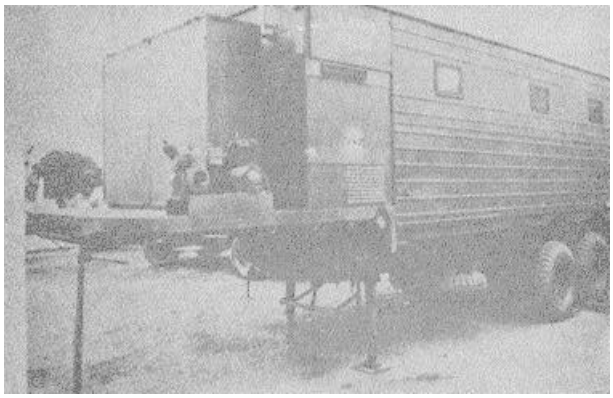


Figure 1. Shop Set C-8, instrument shop.

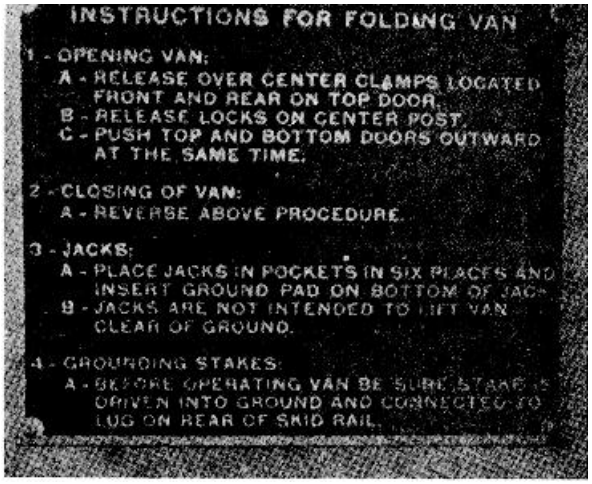


Figure 3. Instruction plate, shop set, Cad.

5. Tabulated Data

a. Organizational Maintenance Data,

MODEL ---------- C-8
Overall Dimensions:
- Overall length ---------- 319 in.
- 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---------- 19,310 lb.

Figure 2. Identification plates, shop set, C-8.

b. Field and Depot Maintenance Data.

(1) Electrical systems:

Power source ----Auxiliary; generator or domestic.

Electric 1 power requirements-----110-120 volt, ac, single phase, 60 cycle; 220-240 v, ac, single phase, 60 cycle; 220-440 v, ac, 3 phase, 60 cycle.

Electrical connections, shop----------Power cable, male to female joy plug.

Safety devices ------Circuit breakers and switches (fig. 4).

Controls ----------Thermal-magnetic circuit breaker panel; 14 breakers (fig. 4).

Electrical connections, equipment --------Receptacles and circuit breakers (fig. 4).

(2) *Pneumatic systems*:

Power source -------Air compressor, reciprocating, electric, motor driven.

Compressor. made and model -------Military Specification MIL C-13874, Class A, Style

Compressor mounting ---------Bolt down.

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 technical manual for the compressor.

Controls ---------- Shut off valve (fig. 5; oil and water separator, gages, regulators, valves, and check units (fig. 5).

Pneumatic connections, equipment ------- Quick disconnect fittings (fig. 13).

(3) Utility system:

Type equipment---- Bench tops, maple, size A, B, C, and D, storage cabinets, Type I, II, and III.

Equipment function---------- Bench tops-work areas, and mounting bases. Storage cabinets-storage of handtools and accessories.

Equipment mounting --------- Bench tops-bolt mounted to storage cabinets Storage cabinets-bolt mounted to floor and to 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 the responsibility of the operator 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 chapter 8, for location and mounting instructions of the equipment. Male a record of any malfunctions. Notify the responsible maintenance echelon of deficiencies for correction as quickly as possible.

7. Before Operation Service

Lubricate equipment in accordance with paragraphs 29 and 30.

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 inside right rear door of the shop. This panel is equipped with circuit breakers and an identification list (fig. 4); additional circuits may be installed, when necessary, in the panel. A layout (wiring diagram) of the shop is shown in figure 8. An outside power receptacle is mounted at the right rear of the shop exterior.

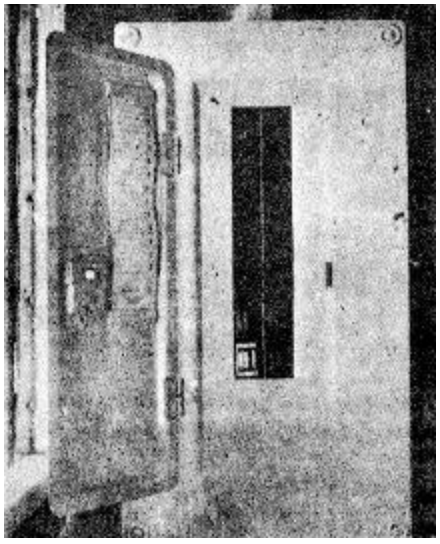


Figure 4. Electrical control panel and identification list.

Caution: **Do not modify power receptacle or electrical cable.**

10. Pneumatic Controls and Instruments

Pneumatic controls and instruments (fig. 5), are mounted in the upper left hand rear corner of the shop interior. The controls and instruments include valves, regulators, separator, gages, and check units.

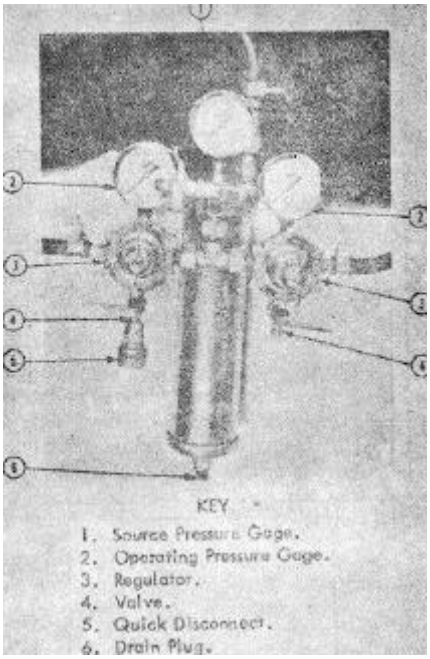


Figure 5. Pneumatic controls and instruments.

Section III. OPERATION UNDER USUAL CONDITIONS

11. General

Instructions in this section are published 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 services (par. 31 through 34).

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

c. Connect power supply equipment.

***Note*: Check auxiliary power connections prior to 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 Shop Set, Aircraft Maintenance, Semitrailer Mounted, C -8, Instrument Shop, (par. 4), is now ready for operation.

e. It is essential that the operator(s) be' completely familiar with the technical manual for the equipment.

13. Shutdown of Shop Set

a. Shutdown instructions for the units comprising Shop Set, Aircraft Maintenance, Semitrailer Mounted, C-8, Instrument Shop, are contained in the technical manual issued for

the individual items. It is essential that the operator understand these instructions.

b. Perform "after operation" daily services.

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

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

(3) Plug cords of equipment to be operated into receptacle provided.

c. Pneumatic System.

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

(2) Allow sufficient time for buildup of source pressure in the tank and drain the oil and water separator (fig. 5).

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. 5). to obtain an operating pressure of 75 psi.

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

(6) Insert adapters attached to 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).

b. Store all tools and equipment (fig. 7).

c. *c.* Install security locking bars on cabinets with drawers (fig. 6).

d. Secure tools or equipment too large for bin storage, with special fastenings provided.

e. Secure equipment in open bins with web straps or special fastenings.

f. Store cable or hose in locations provided.

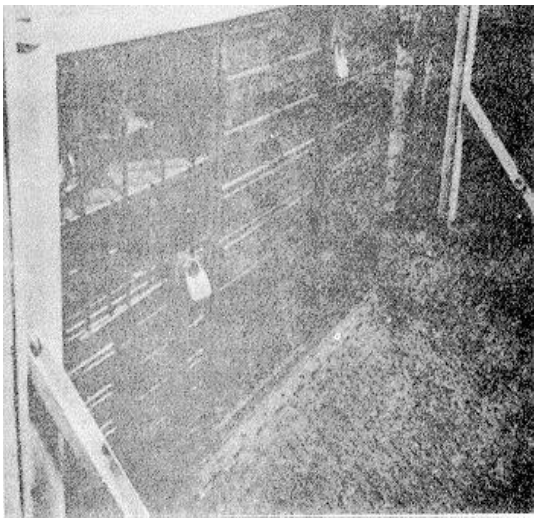


Figure 6. Security locking bars, open bin security fastenings; typical installation.

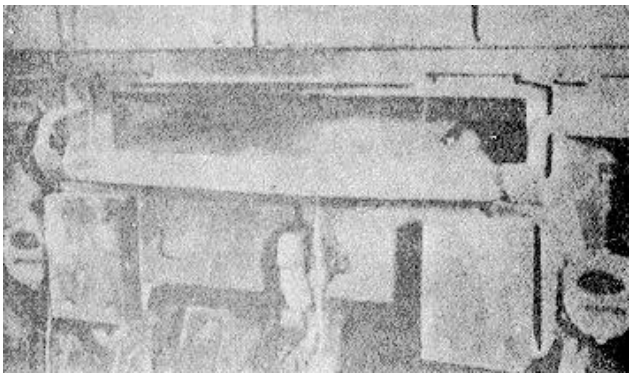


Figure 7. Jack stowage box.

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

16. Maintenance and Operating Instructions

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

17. Auxiliary Connections

Connections are provided for auxiliary pneumatic and electrical hookups. The location, purpose, and description of these auxiliary outlets are described in paragraphs 73 through 75. Operating instructions for the auxiliary connections are contained in this chapter.

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 insure proper operation and functioning but also guard 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. Extensive preparation of equipment for operation in extreme cold weather is necessary. Generally, extreme cold will cause lubricants to thicken, freeze batteries and cause various construction materials to become hard, brittle, and easily damaged or broken.

> ***Caution*: It is imperative that 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 temperature 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 paints 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 burn-outs.

(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 side panels are not installed, be sure to protect all equipment against entrance of loose, drifting snow during the halt.
(4) Open drain cocks to remove liquid from water separators, inspect drain cocks for obstructions. Remove any foreign material or obstructions from drain cocks. Leave drain cocks 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 systems and air filters. Check ventilators periodically for cracks and obstructions. Check 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 it 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.

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 19 and 20 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 MIL-C-6592, Type I, to all surfaces not protected by paint.

Caution: **Do not allow this mixture to come in contact with rubber materials or parts which are exposed to direct flame.**

Operating equipment including hand tools, may be protected by an application to exterior surfaces of corrosion preventive compound, Military Specification MIL-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 the specific technical manual by second echelon maintenance personnel.**

CHAPTER 3

MAINTENANCE INSTRUCTIONS (OPERATOR)

Section I. SPECIAL ORGANIZATIONAL TOOLS AND EQUIPMENT

27. Special Tools and Equipment Which Are Supplied With or Issued for Use With the Equipment

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 specific item.

28. On Vehicle Material (OVM)

Lists of tools and parts attached to the equipment are listed in the technical manual for the specific item.

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. Be sure that the lubricant is clean before using. Keep lubrication equipment in a place where it will be safe from damage and free of dirt. Section V, of Chapter 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 lubricant. Use an approved cleaning solvent wash the surfaces. Wipe off all excess lubricant after lubricating.

c. Points 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).

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 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 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 consists 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 assembled*. 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 check by hand or wrench for looseness. Such an examination must include any rackets, lock washers, lock nuts, locking wires, or cotter pins used.

(4) *Excessively torn*. 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 the procedure opposite it should be performed during that part of the daily service in which it appears.

Table I. Operator Daily Service

Intervals				*Procedure*
Before operation	*During Operation*	*At Halt*	*After Operation*	
				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 paragraphs 33 and 34 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, vibrations, or malfunction.
X	----	----	X	*Lubrication.* Lubricate in accordance with para- graphs 29, and 30.
				Unusual Conditions
X	X	X	X	*Extreme Cold* (pars. 18-26).
X	X	X	X	*Extreme Heat.* (pars. 18-26).
X	----	X	X	*Extreme Wet.* (pars. 18-26).
X	X	X	X	*Snow and Ice.* (pars. 18-26).
X	----	X	X	*Salt Water.* (pars. 18-26)
X	----	X	X	*Dust.* (pars. 18-26).
X	X	X	X	*High Altitude.* (pars 18-26)

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 drycleaning 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 drycleaning 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 hand tools, 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 lubrication order.

d. Name plates, 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 probable causes of the trouble. The possible remedy recommended is described opposite the probable 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 of the proper maintenance echelon for correction.

37. Electrical Equipment Operates at Slow or Reduced Speed

Probable cause	*Possible remedy*
Loose connectors	Tighten connectors.
Circuit breaker in "OFF" position	Return breakers to "ON" position.
Cause beyond maintenance scope of operator	Notify second echelon maintenance.

38. Electrical Equipment Stops During Operation

Probable cause	*Possible remedy*
Power cord of equipment not properly plugged in receptacle	Remove plug receptacle and re-insert fully into receptacle.
Equipment overheated	Reduce operating speed; allow equipment to cool and re-start.
Circuit breaker tripped to "OFF" position	Re-set circuit breaker to "ON" position; re-start equipment.
Cause beyond maintenance scope of operator	Notify second echelon, maintenance.

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 auxiliary power source	Check for power source operation; notify operator.
Circuit breakers in electrical panel on "OFF" position	Re-set circuit breakers to "ON" position.
Safety disconnect switch open	Close safety disconnect switch.
Cause beyond maintenance scope of operator	Notify second echelon maintenance.

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 (75 psi).
Loose connection at air hose quick disconnect adapter. Water in air	Re-seat adapter.
Cause Beyond maintenance scope of operator	Drain water separator.
	Notify second echelon maintenance.

41. Pneumatic Equipment Stops During Operation

Probable cause	*Possible remedy*
Air compressor stopped	Check compressor operation; start compressor.
Equipment overloaded	Reduce feed, pressure, or Connect air line.
Air line disconnected	speed as necessary.

Probable cause	*Possible remedy*
Cause beyond maintenance scope of operator	Notify second echelon maintenance.

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 76 psi.
Air hose of equipment not properly connected to adapter	Remove air hose from supply at quick disconnect; clean adapter and reinstall hose.
Cause beyond maintenance scope of operator	Notify second echelon maintenance.

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 echelon maintenance.

44. Excessive Noise

Probable cause	*Possible remedy*
Equipment receiving improper lubrication	Lubricate in accordance with paragraphs 29 and 30.
Equipment being used improperly	Consult technical manual for equipment; use in accordance with recommendations in technical manual.

Section V. ELECTRICAL SYSTEM

45. General

The electrical system of Shop Set, Aircraft Maintenance, Semitrailer Mounted, C-8, Instrument Shop, is a 110-220-440-volt, single and three phase, AC system. Electrical power is supplied to the shop from an external source

to an external power receptacle mounted at the right rear exterior corner of the shop. The external power receptacle feeds directly to the safety disconnect switch, and t' en to the control panel. The electrical panel contains 14 thermal-magnetic circuit breakers for supplying power to the various circuits. The wiring diagram for the shop set C-8, is contained in figure 8.

46. 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 in contact with 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 external power receptacle prior to adjusting female electrical connectors or receptacles.**

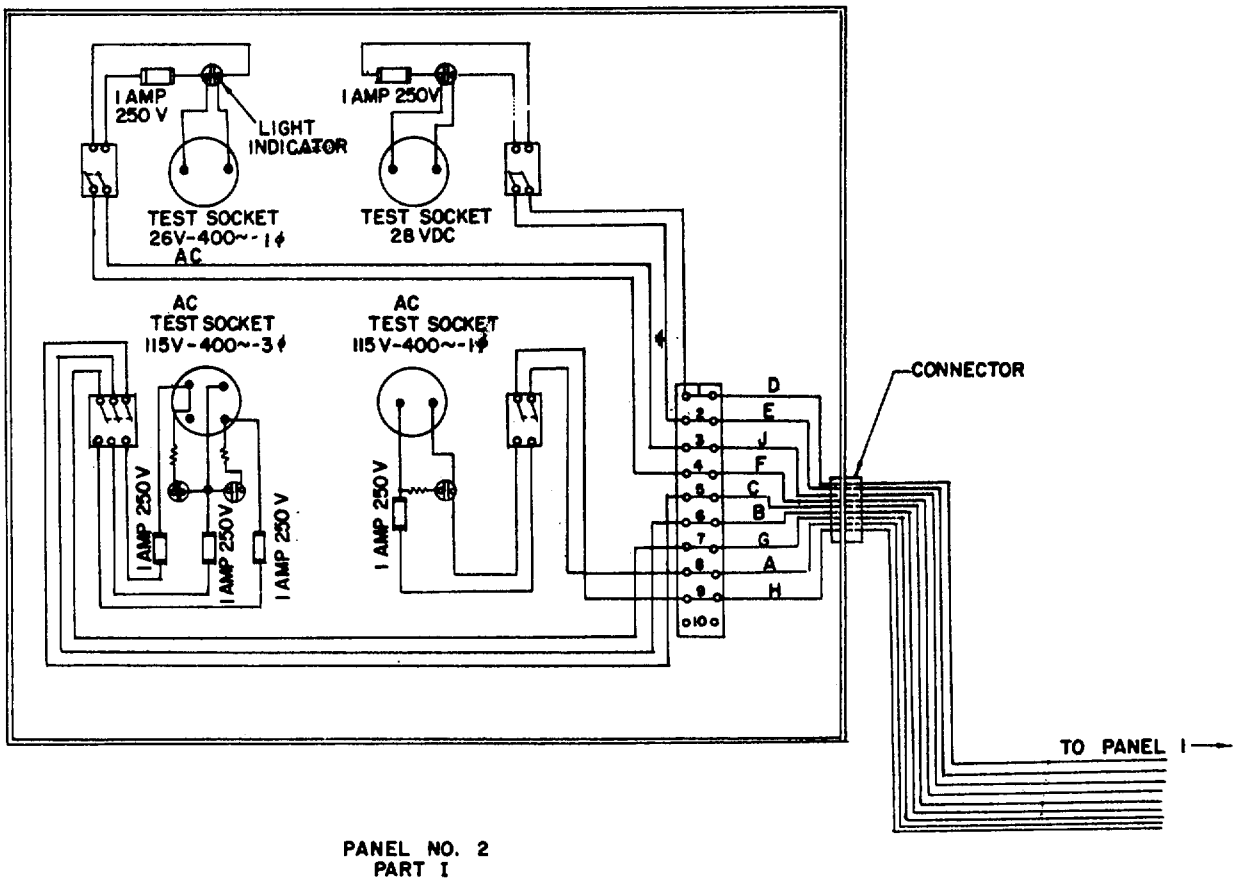


Figure 8. Wiring diagram, shop set C-8.

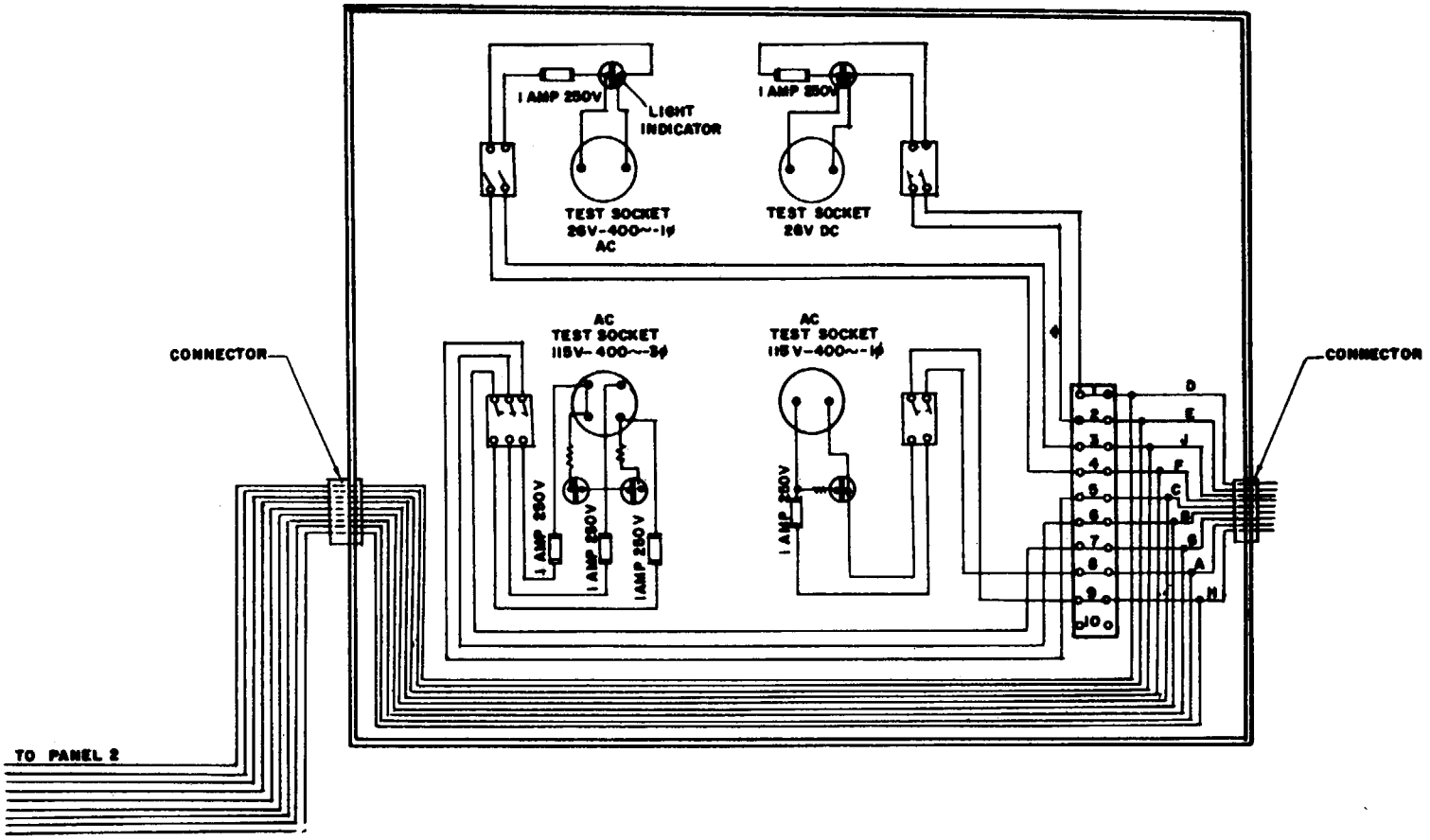
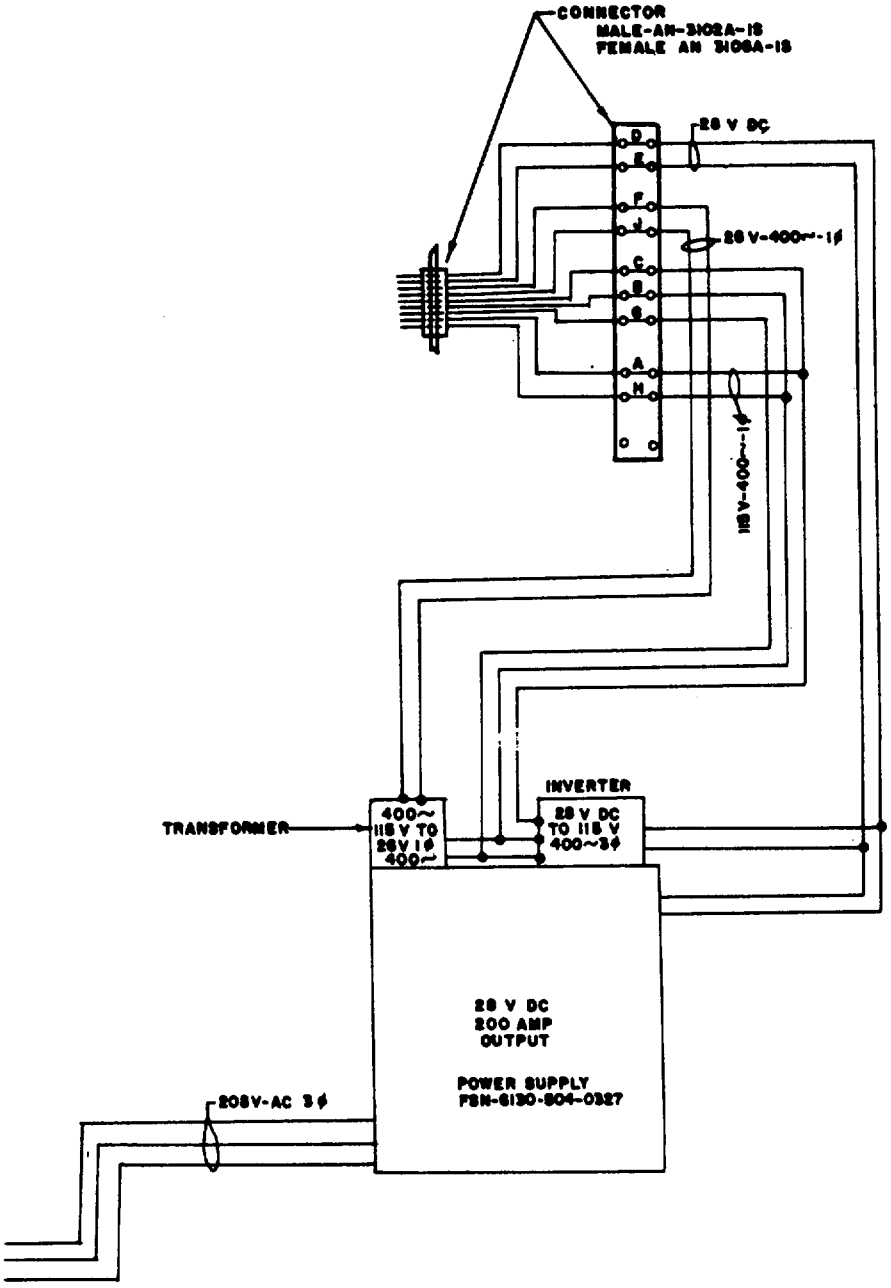
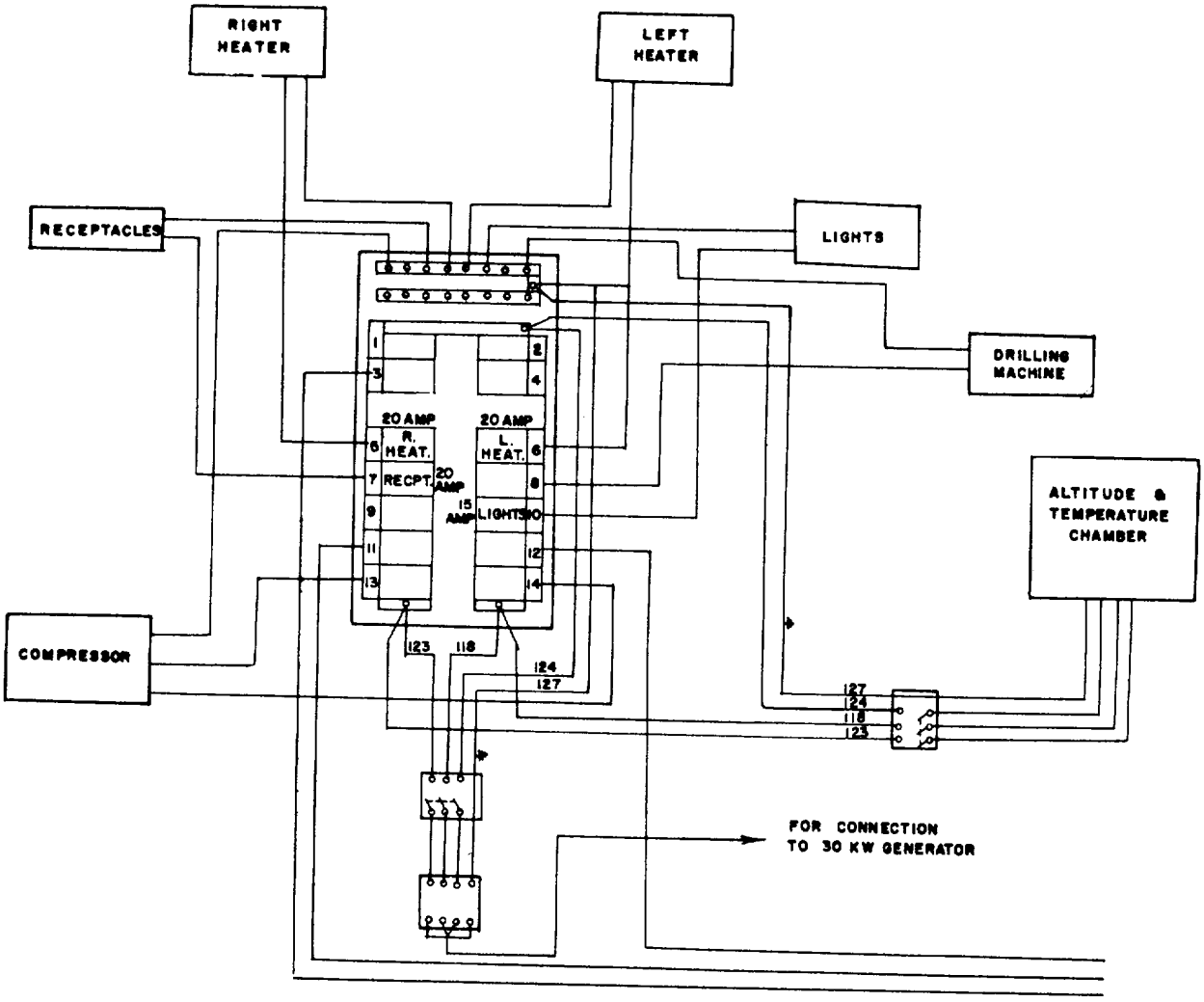


Figure 8. -Continued.



PART III

Figure 8. -Continued.



PART IV

Part IV
Figure 8. -Continued.

Section VI. PNEUMATIC SYSTEM

47. General

The Pneumatic System of Shop Set, Aircraft Maintenance, Semitrailer Mounted, C-8, Instrument 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 9 through 20.

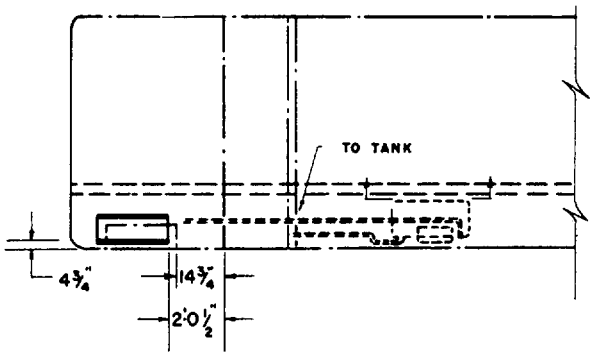


Figure 9. Pneumatic system installation, plan view.

48. Air Compressor

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

49. Air Supply Tank

The air supply tank is mounted underneath the shop floor at the forward left side of the shop (figs. 18 and 19). Operator maintenance consists of service and adjustments as outlined in the technical manual.

50. Controls and Instruments

a. General. Controls and instruments for the pneumatic system (fig. 5), 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 require 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 in cleaning 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 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 (fig. 5), in or out until an operating pressure (75 PSI) is obtained.

51. 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.**

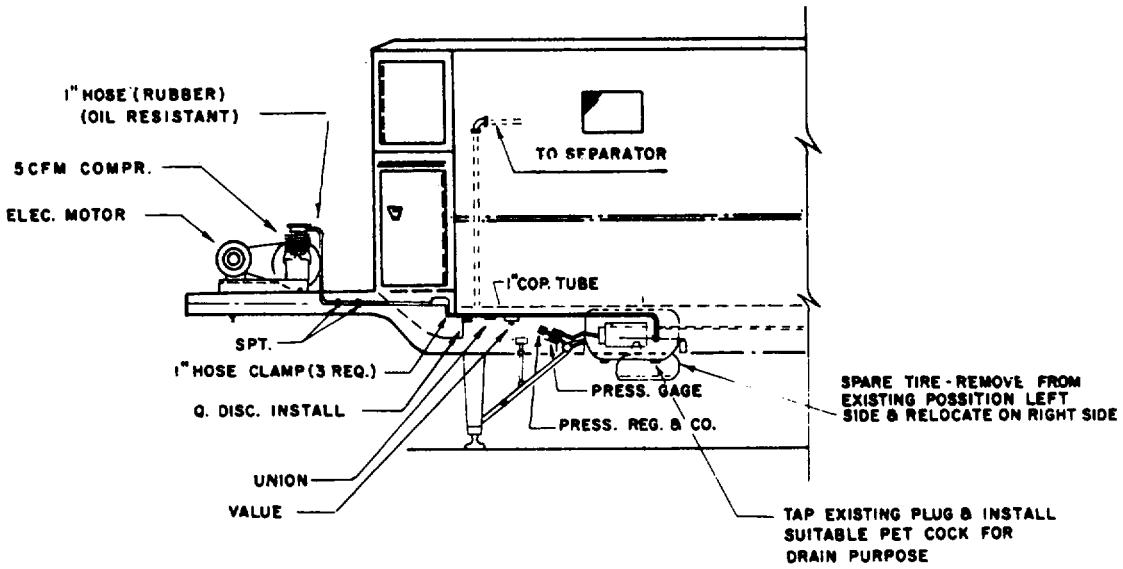
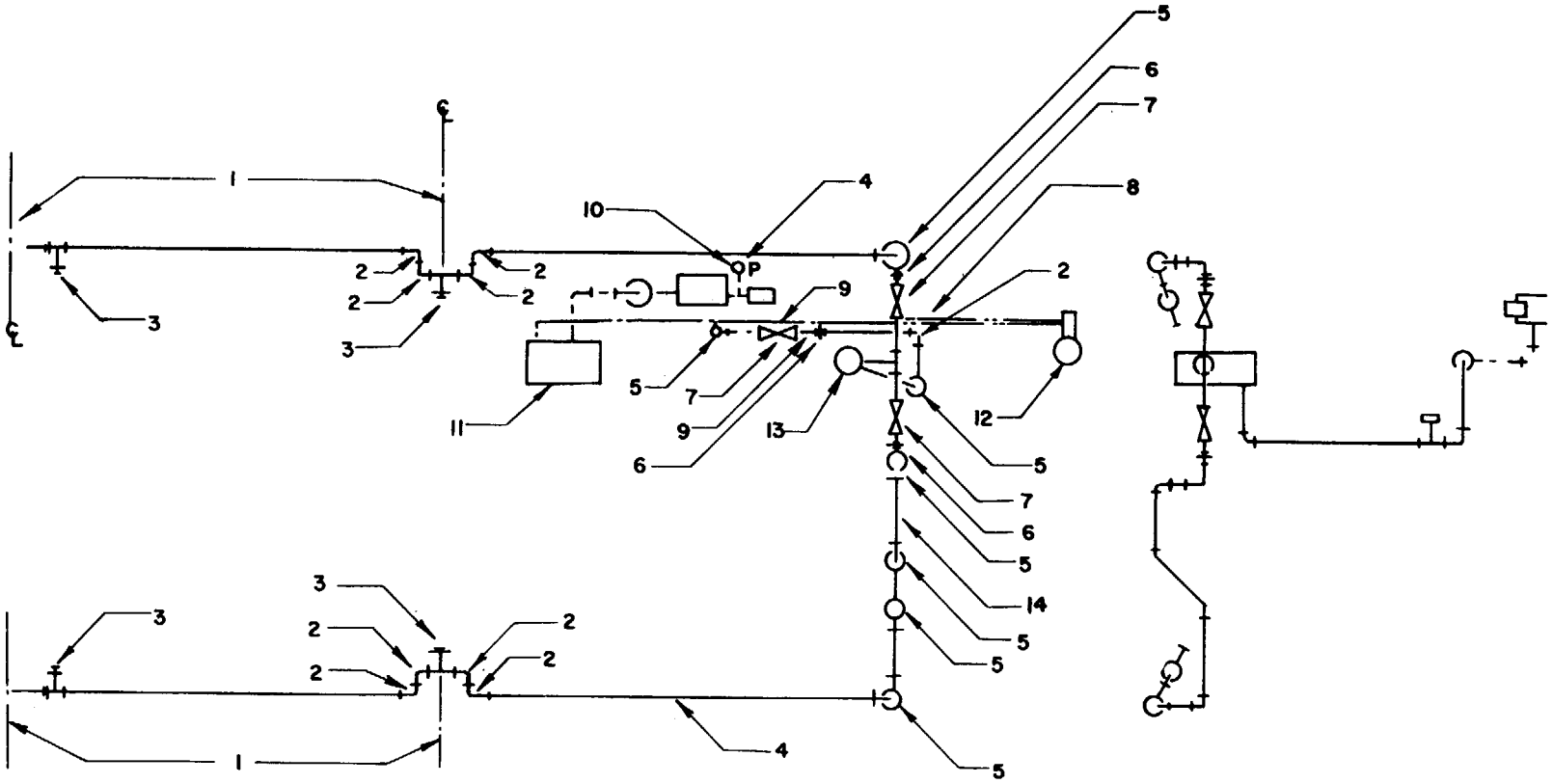


Figure 10. Left side elevation, pneumatic system.

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 by the operator consist essentially of adjusting adapters, or quick disconnect fittings, to obtain a more positive seal to prevent loss of compressed air. These adjustments to adapters or fittings are made by hand and no special tools or equipment are required



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 11. Air line layout, top view.

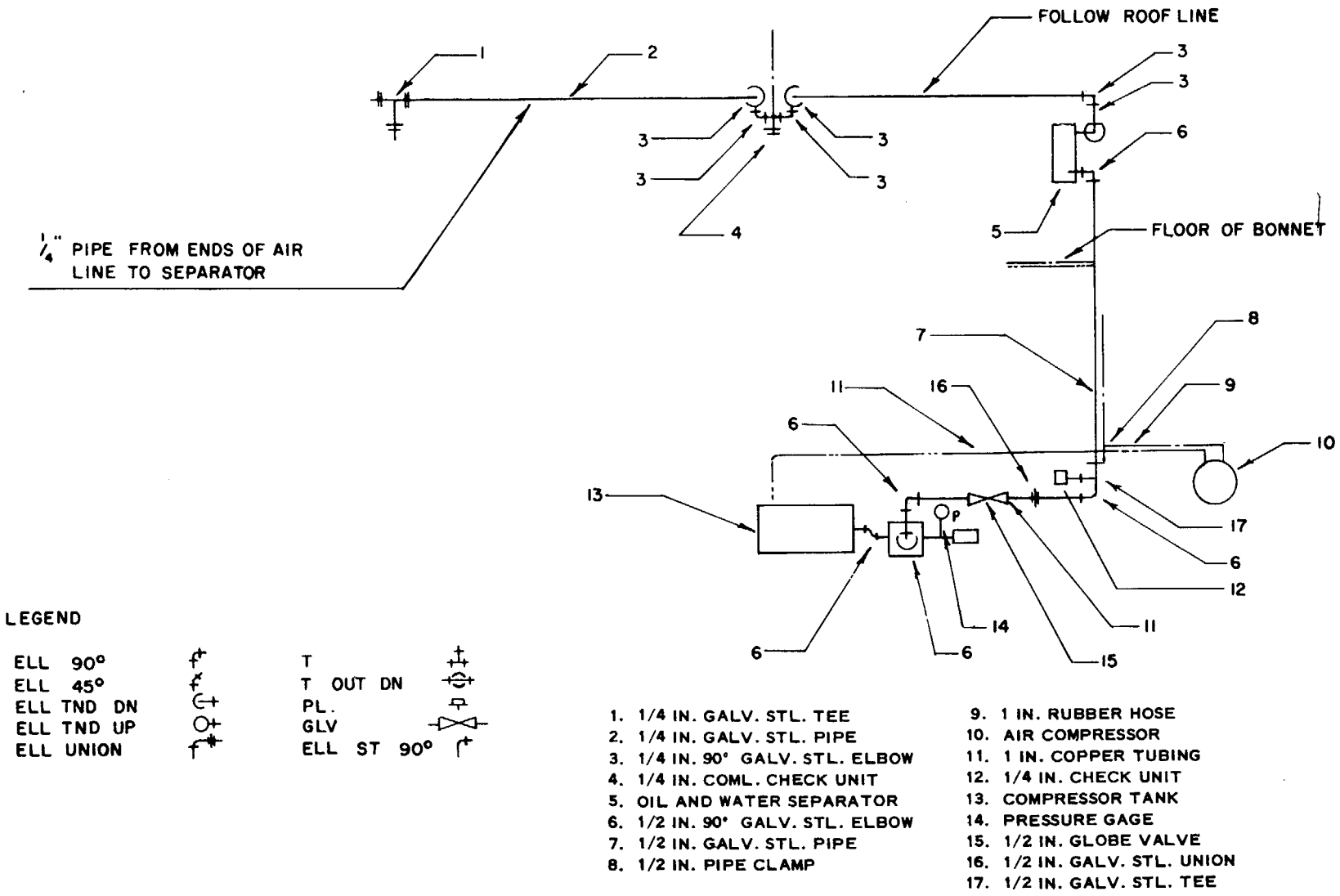


Figure 12. Air line layout, side view.

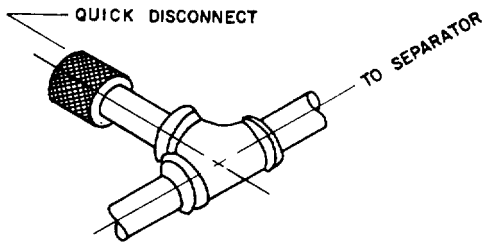


Figure 13. Quick disconnect fitting, compressor tank.

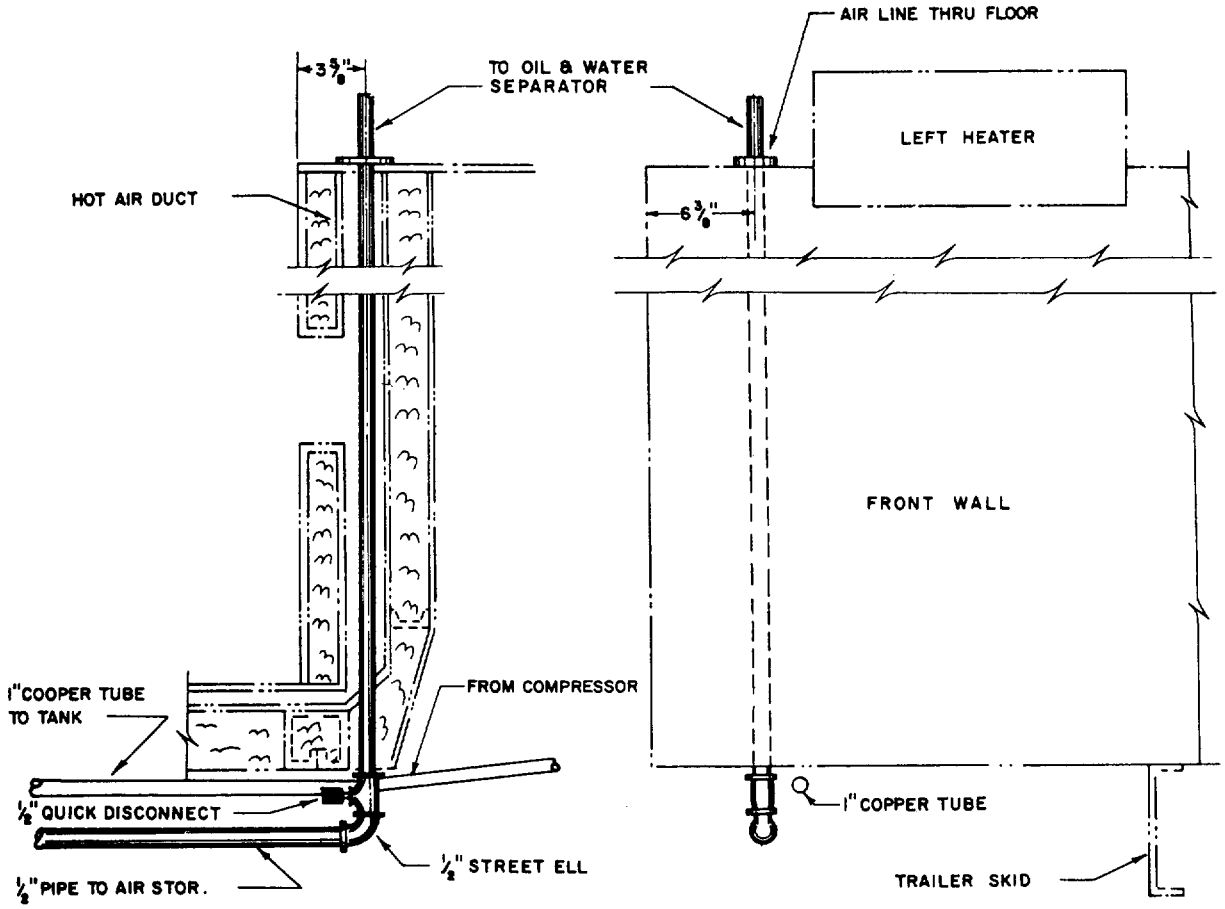


Figure 14. Air line layout, front view.

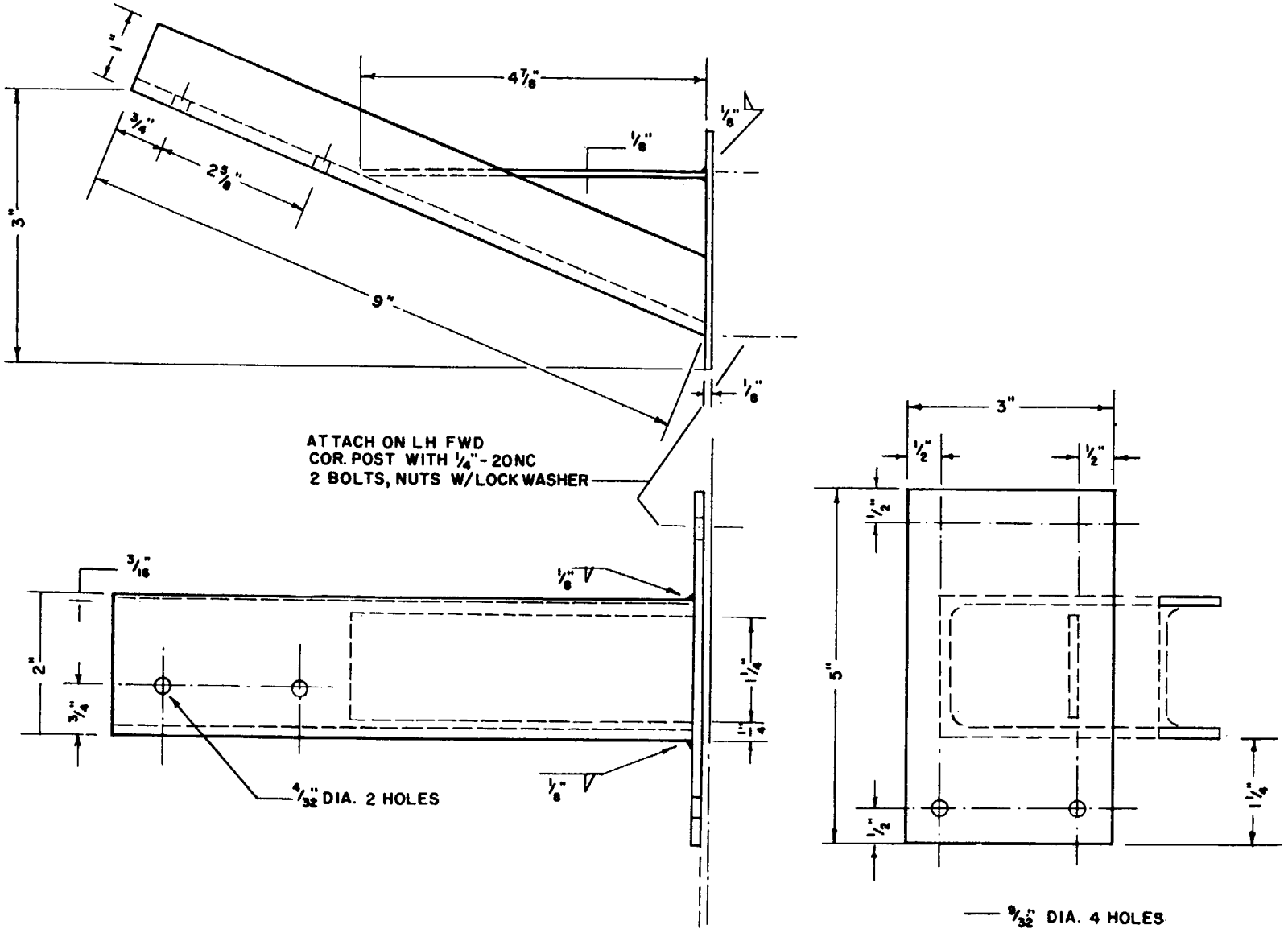


Figure 15. Separator mounting bracket.

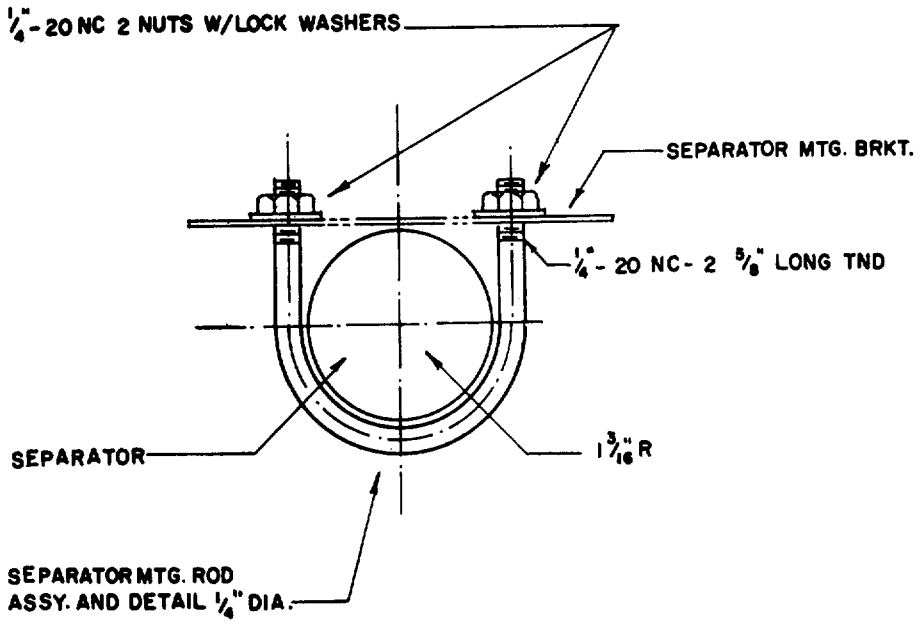


Figure 16. Separator mounting rod.

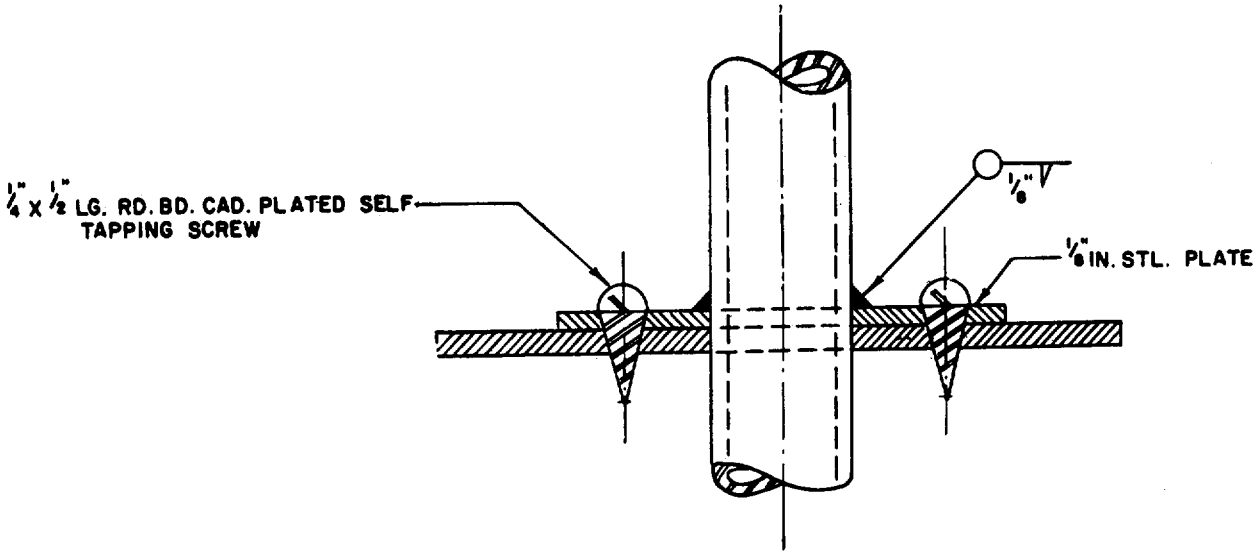


Figure 17. Air line mounting, floor.

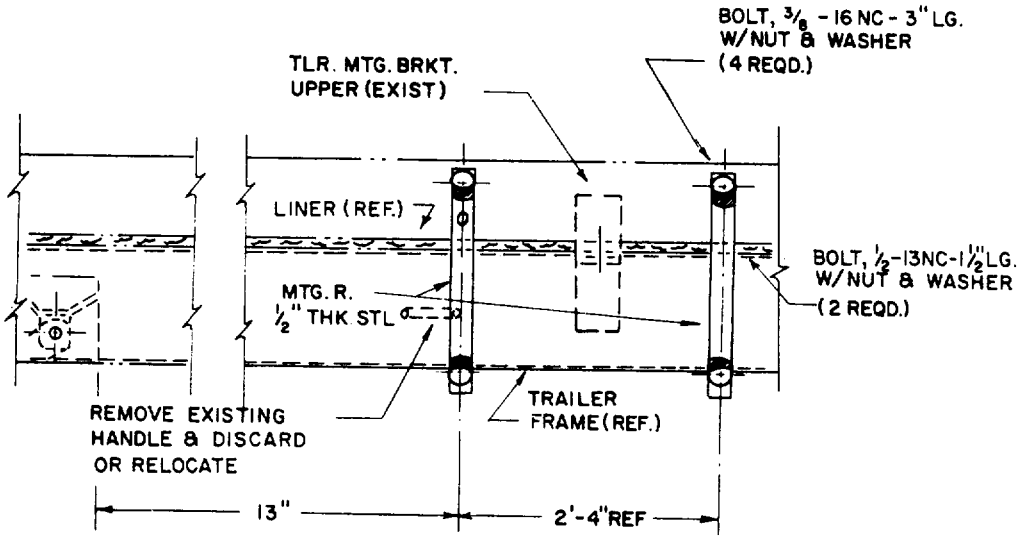


Figure 18. Air compressor tank installation, top view.

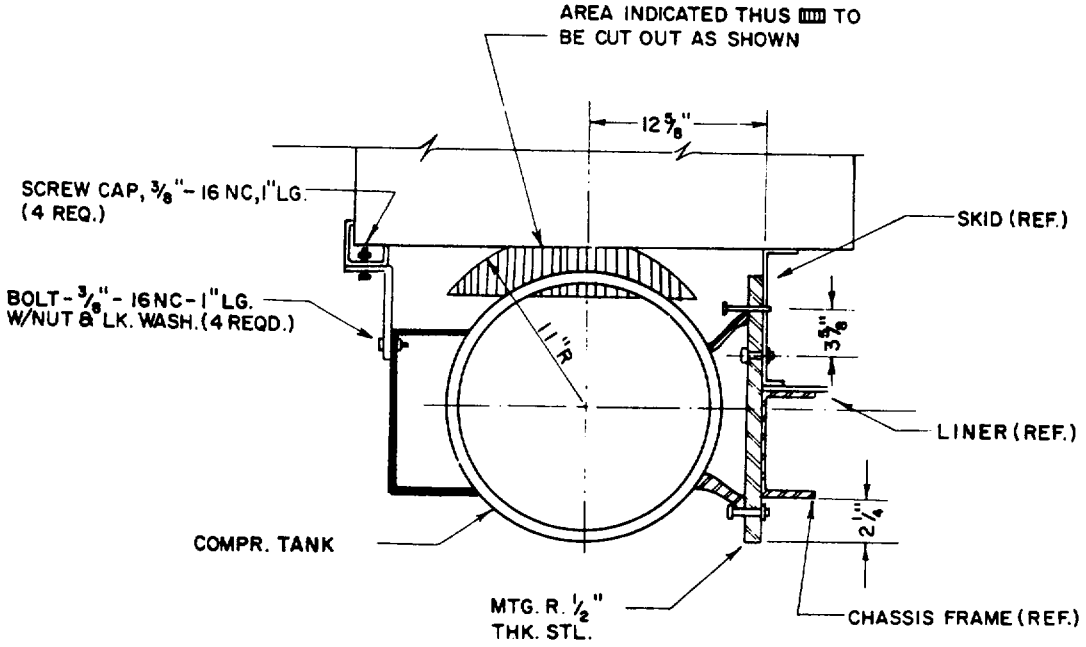


Figure 19. Air compressor tank installation, end view.

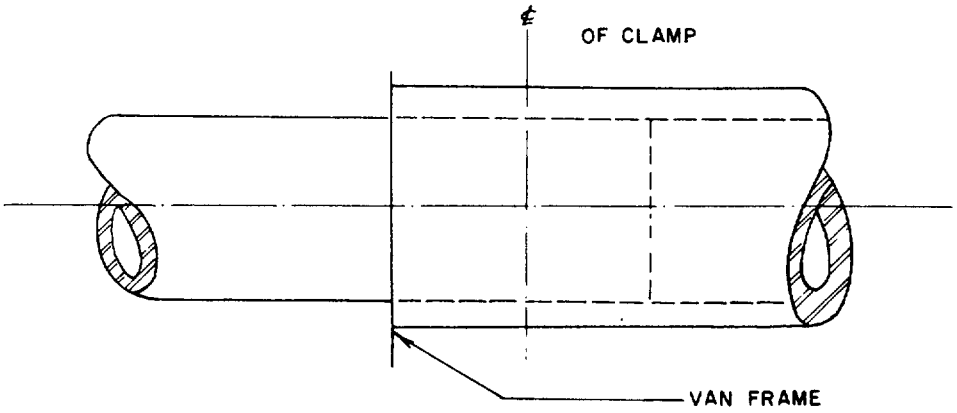


Figure 20. Pipe to hose connection; compressor to tank.

Section VII. UTILITY SYSTEM

52. General

The utility system of Shop Set, Aircraft Maintenance, Semitrailer Mounted, C-8, Instrument Shop, consists of storage cabinets and bench tops. Layout of the utility system of the shop set is shown in figures 21, 22, and 23.

53. Maintenance

a. General. 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 damage 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 aligning 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.**

b. 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 such 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 a severe nature as to remove protective coating or when the protective coating is marred by scratches, nicks, gouges, or exposure to the elements.

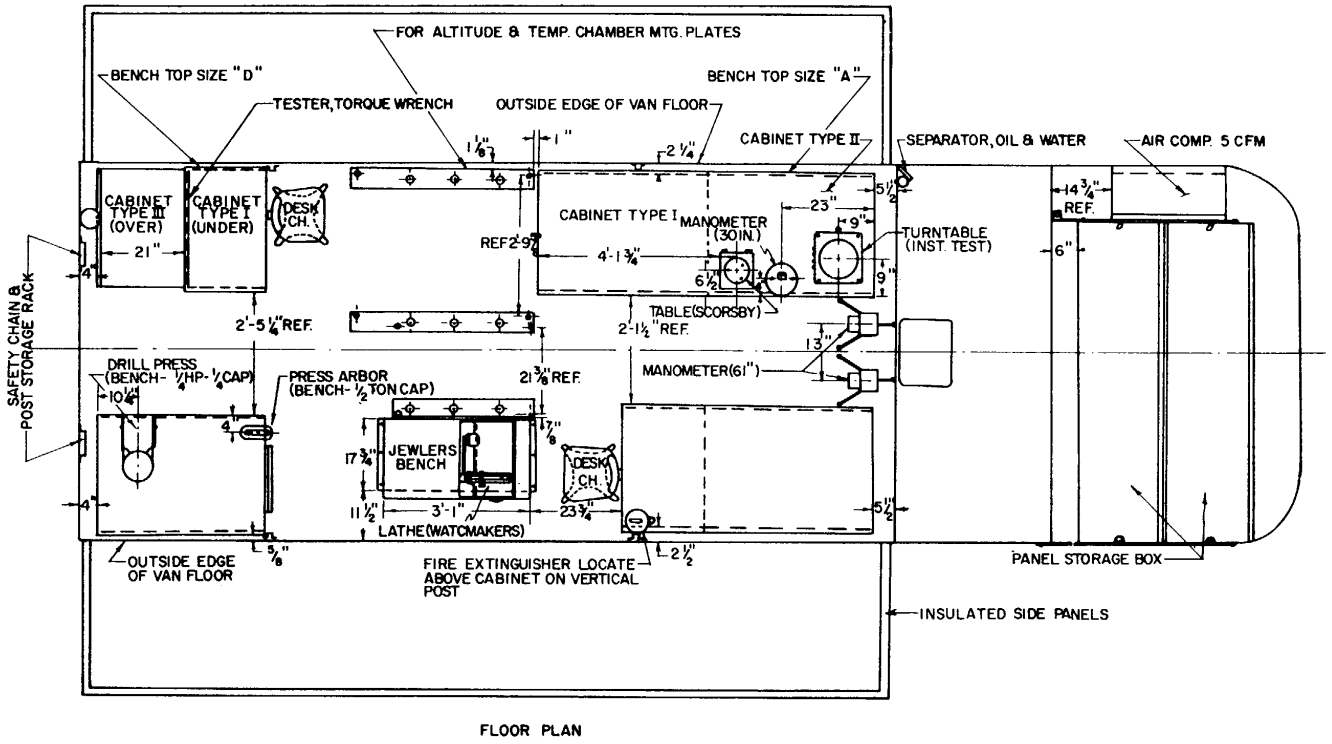
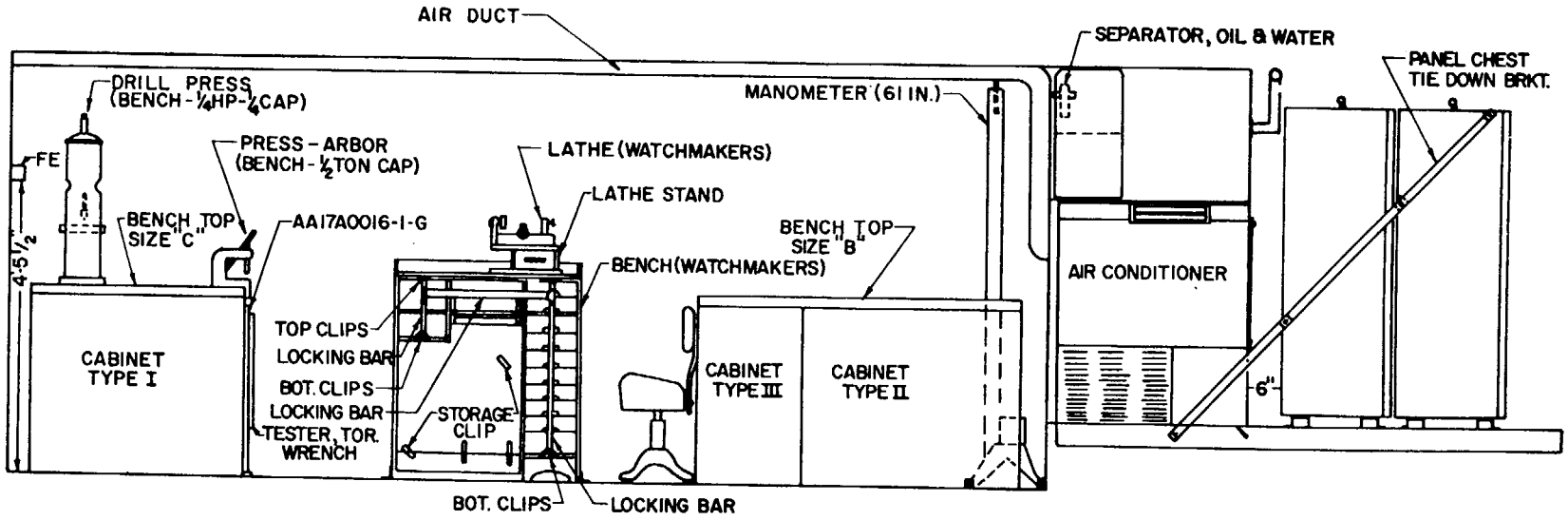


Figure 21. Floor plan layout, top view.



SIDE ELEVATION

Figure 22. Floor plan layout, Right side view.

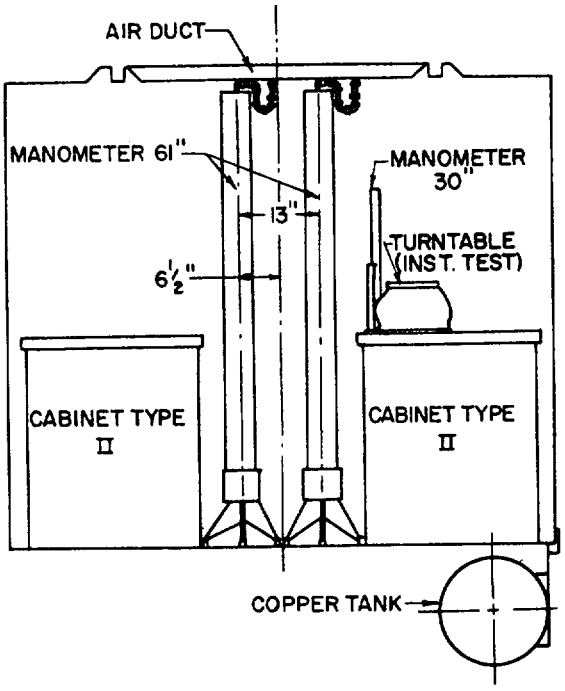


Figure 23. Floor plan, front view.

CHAPTER 4

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

Section I. GENERAL

54. Purpose

This chapter furnishes the operator with sufficient information for preparation of the equipment comprising Shop Set, Aircraft Maintenance, Semitrailer Mounted, C-8, Instrument Shop for shipment and limited storage. Instructions are also included for demolition of the shop set to prevent enemy use.

55. 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 methods outlined for demolition of equipment to prevent enemy use are intended as a guide for the operator.

Section II. SHIPMENT AND LIMITED STORAGE

56. Shipment

The operator is responsible for the initial steps in preparing Shop Set, Aircraft Maintenance, Semitrailer Mounted, C-8, Instrument 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 (fig. 6).

c. Store cables and hose in storage spaces provided.

57. 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 responsibilities 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, when 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--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 paragraph 7 (lubrication), and paragraph 53 (shipment). 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

58. 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) Dest*r*uction *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 useable condition in the combat zone either by repair or cannibalization. Adequate destruction of the material, including essential repair 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 hazards to friendly troops from fragments or ricocheting projectiles which may occur incidental to the destruction.

(2) Observance of appropriate safety precautions.

59. 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.**

60. Destruction by Use of Explosives

a. Remove and empty portable fire extinguishers.

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

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

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

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

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

(5) Connect the 4 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 foot 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.**

61. Destruction by Gunfire

a. Remove and empty portable fire extinguishers.

b. Destroy the shop set by gunfire using artillery, machine guns, rifles using rifles 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 range 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

62. General

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

63. Unloading and Uncrating New Equipment

a. Unloading. Remove shoring blocks, tie-downs, and chocks, before unloading equipment.

***Warning*: Remove nails and loose strapping from loading 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. 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.

64. Depreservation

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

b. Remove preservative from exterior surfaces with solvent, Federal Specification P-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 128 through 133.

65. Inspection

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

Section II. CONTROLS AND INSTRUMENTS

66. 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.

67. Description

Controls and instruments are provided to supply, regulate, and distribute the electrical or penumatic power required to operate the shop. Detailed description, location, and illustrations are contained in paragraphs 8 through 10, 45, and 46.

Section III. OPERATION UNDER USUAL CONDITIONS

68. 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.

69. Preparations for Use of Equipment

a. Exterior.

(1) Install ground stake (fig. 24).
(2) Position chocks.
(3) Install the stabilizing jacks and adjust as necessary (fig. 25).
(4) Remove entrance ladders and place in position.

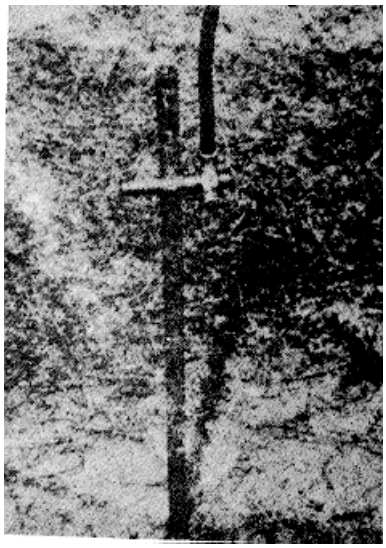


Figure 24. Installation of ground stake.

b. Opening of Van. All van sides open from inside the van (figs. 26, 27 and 28; and TM 9-2330-238-14).

(1) Release over-center clamps front and rear at top of each door.
(2) Release locks on center post, two on each side (fig. 27, and TM 9-2330-238-14).
(3) Push top and bottom doors outward at the same time (fig. 28).

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

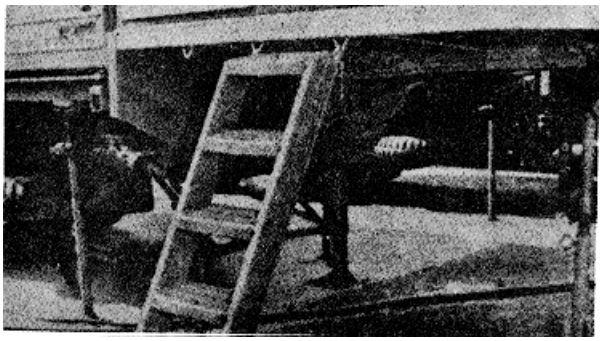


Figure 25. Installation and adjustment of stabilizing jacks; positioning frontladder.

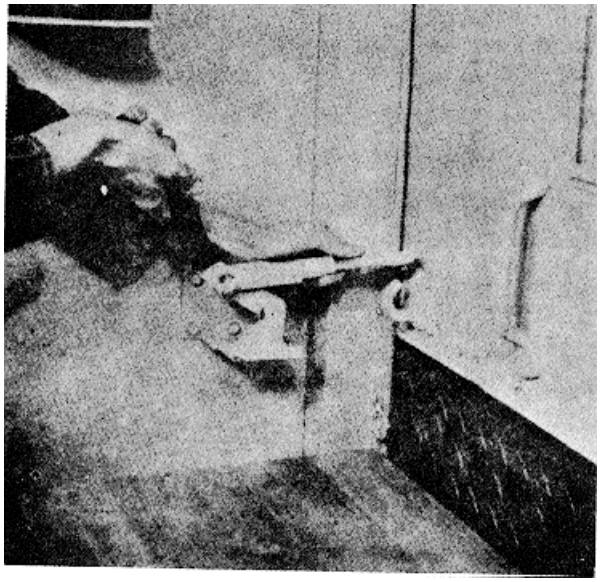


Figure 26. Opening folding shop sides, step I.

70. Shutdown of Shop Set

a. Shutdown instructions for the units comprising Shop Set, Aircraft Maintenance, Semi-trailer Mounted, C-8, Instrument Shop, are contained in the technical manual issued for

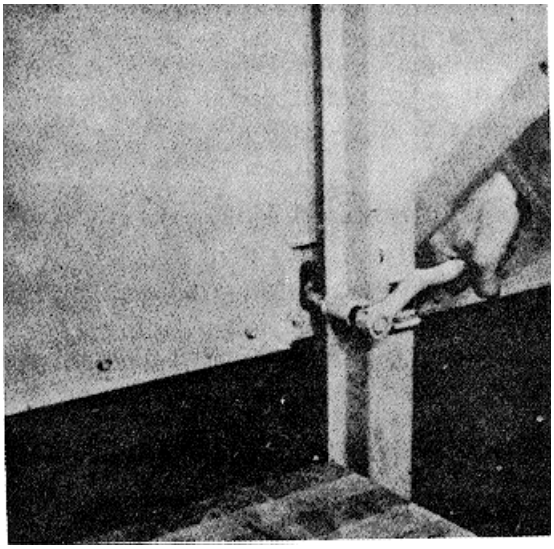


Figure 27. Opening folding shop sides, step II.

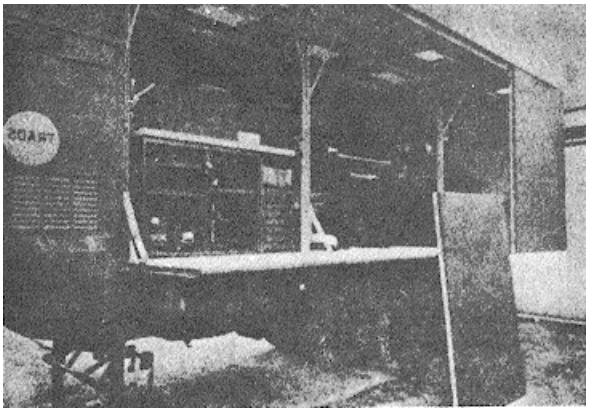


Figure 28. Folding shop sides opened.

the individual items. It is essential that the operator understand these instructions.

b. Disconnect external power sources.
c. Close van sides and rear doors (fig. 1).
d. Disconnect external power sources.
e. Check security of chocks.

71. Operating Details

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

b. 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.

c. Pneumatic System - Compressor Operated
(1) Inspect lines, connectors, and fittings for security and condition.
(2) Check operation of air compressor; refer to compressor technical manual for procedures and details of operation.
(3) With compressor running, inspect lines, connectors, fittings, controls, and instruments for leaks, security, and proper operation.

d. Pneumatic System - Auxiliary Power Operated.
(1) Inspect lines, fittings, and connectors for leaks and security.
(2) Install line from auxiliary to air supply tank (fig. 13).
(3) With auxiliary air supply connected, inspect lines, connections, fittings, controls, and instruments for leaks security, and proper operation.

72. Movement of Equipment

a. Open van in accordance with instructions contained in paragraph 69.
b. Close van sides and rear doors (fig. 1).
c. Remove and stow entrance ladders.

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

d. Disconnect external power source (s) 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 AUXIUARY

73. General

Auxiliary equipment may be operated in conjunction with Shop Set, Aircraft Maintenance, Semitrailer Mounted, C-8, Instrument Shop, by use of an external power receptacle for electrical power and a quick disconnect fitting for pneumatic power.

74. External Power Receptacle

The external power receptacle is mounted at the right rear corner of the van. This is a female receptacle, designed to connect with a male plug.

75. Quick Disconnect Fitting

The quick disconnect fitting (fig. 13), is designed to connect an external pneumatic power source to the pneumatic system of the shop. An oil and water separator is installed between the quick disconnect fitting and the shop air lines to trap water or oil in the air from the power source.

Section V. OPERATION UNDER UNUSUAL CONDITIONS

76. General

This section contains information pertinent to second echelon maintenance operation of Shop Set, Aircraft Maintenance, Semitrailer Mounted, C8, Instrument Shop, under unusual conditions. Refer to paragraphs 18 through 26 for additional information. Install the insulated side panels (fig. 29) when the equipment is used. Report recurrent failure of' the equipment resulting from operation under unusual conditions on DA Form 468.

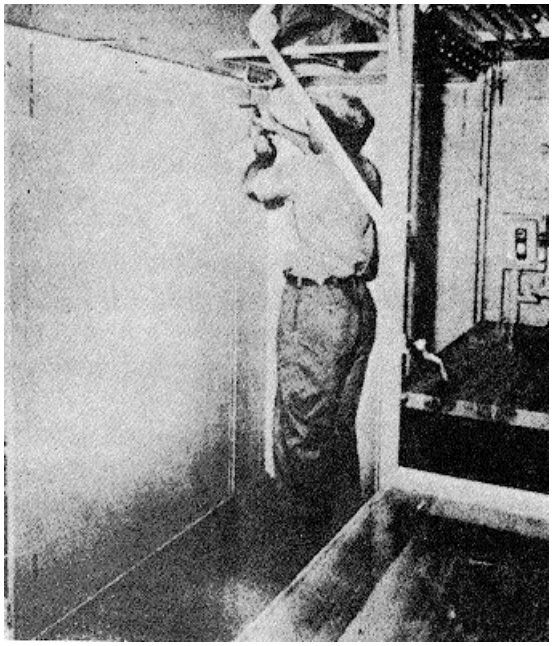


Figure 29. Side panel installation.

77. Extreme Cold Weather Conditions

Special equipment is provided for the protection of equipment in conditions (below 0°F).

78. Extreme Hot Weather Conditions

Frequently inspect bearings and lubricants in extreme hot weather to insure proper operation. Refer to paragraphs 18 through 26 for additional instructions.

79. Operation in Extreme Wet Climate

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

80. 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 paragraphs 18 through 26.

81. Operation in Extremely Dusty Conditions

Inspect machined surfaces, bearings, and lubricated surfaces as instructed in paragraphs 29.through 84.

82. 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

83. 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.

84. Parts

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

Section II. LUBRICATION

85. 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 illustrated in technical manual for the item.

86. Special Lubrication Instructions

Refer to paragraphs 6 and 7, 29 through 34, 68 through 72, and 76 through 82 for detailed lubrication procedures for the shop.

Section III. PREVENTIVE MAINTENANCE SERVICE

87. 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, whichever occurs first. The preventive maintenance services to be performed at these regular intervals are listed and described in this section. The maintenance function appearing in the column opposite each service referred to in tables II, III, and IV indicates that a report of the service should be made at 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 item and instructions constitute minimum inspection requirements for the equipment.

88. Weekly and Monthly Preventive Maintenance Service

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

Table II. Electrical System, Preventive Maintenance Services

Item inspected	Inspect for	Services required	Interval Weekly	Interval Monthly
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 sections, 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, handles, covers, missing screws; etc.	X	
	Security	Tighten clamps, screws, knobs, and covers.	X	
	Damage	Replace if major damage, repair 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	Interval Weekly	Interval Monthly
COMPRESSOR LINES AND HOSE.	Operation and function.	In accordance with technical manual for compressor.	X	
	Leaks	Tighten or replace fittings hose, or lines.	X	
	Security	Tighten mounting clamps or install new clamps.		X
	Damage	Repair or replace damaged section.		X
QUICK DISCONNECT FITTINGS.	Leaks.	Replace seals, seats, or fittings, as necessary.	X	
	Ease of operation.	Replace plugs		X

Table III. Pneumatic System, Preventive Maintenance Services-Continued.

Item inspected	Inspect for	Services required	Interval Weekly	Interval Monthly
CONTROLS.	Sticking and binding.	Lubricate, repair or 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, Preventive Maintenance Services

Item inspected	Inspect for	Services required	Interval Weekly	Interval Monthly
STORAGE CABINET DRAWERS.	Sticking, binding and distortion.	Lubricate (pars. 85 and 86), aline or straighten as necessary.	--	X
STORAGE CABINET HINGE POINTS.	Alinement, ease of operation, and condition.	Aline hinges, lubricate (pars. 85 and 86), or replace as necessary.	--	X
STORAGE CABINET EXTERIORS.	Corrosion, rust, chipped, or peeling paint.	Remove corrosion and rust (pars. 29 and 30), touch up, or repaint as necessary.	--	X
STORAGE CABINET LOCKING DEVICES.	Security, ease of operation, and alinement.	Tighten bolts, re-aline, 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 screws or bolts as necessary.	--	X

Section IV. TROUBLESHOOTING

89. 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.

90. 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.

91. 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.

92. Electrical Equipment Stops During Operation

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

93. Electrical Equipment Will Not Start

Probable cause	*Possible remedy*
Power cord disconnected.	Check rear power outlet for proper installation of power cord from auxiliary power source.
One or more circuit breakers inoperative.	Check circuit breakers and replace as necessary.
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.

94. 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 connector(s).
Cause beyond repair scope of operator.	Notify supporting field maintenance unit.

95. Pneumatic Equipment Stops During Operation

Probable cause	*Possible remedy*
Failure of source of power.	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.

96. Pneumatic Equipment Will Not Start

Probable cause	*Possible remedy*
Source of power disconnected.	Check connections at points of installation.

Probable cause	*Possible remedy*
Faulty check valves	Check air pressure at regulator; 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.

97. 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.

98. Excessive Noise

Probable cause	*Possible remedy*
Lack of lubrication.	Lubricate equipment in accordance with paragraphs 85 and 86.
Improper use of equipment.	Check specific hand-books for use of equipment.
Cause beyond repair scope of operator.	Notify supporting field maintenance.

Section V. RADIO INTERFERENCE SUPPRESSION

99. 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 equipped without radios be sup pressed 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.

100. 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 should be used in conjunction with this manual. It is the responsibility of the operator to familiarize himself with these manuals and to perform the inspections listed therein.

Section VI. ELECTRICAL SYSTEM

101. General

A detailed description of the electrical system is contained in chapter 3, section V.

102. Electrical Wiring Installation

a. General. The electrical wiring installation (fig. 8), is comprised of:

(1) Power cord 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 electric control panel.

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

b. Second Echelon Maintenance. Inspect and replace, as necessary; wiring, connectors, receptacles, and conduit in accordance with

instructions in chapter 6, sections III and IV, and appendix II.

***Warning*: Disconnect power source before servicing.**

103. Electrical Switches and Circuit Breakers

a. General. Electrical switches and circuit breakers are installed in the electrical system (fig. 4), 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 paragraphs 87 through 98 and appendix II.

104. Lighting System

Inspect and replace in operative lighting tubes or bulbs in accordance with instructions in paragraphs 87 through 98 and appendix II.

***Note*: For details of shop lighting system refer to TM 9-2330-23814.**

105. Controls and Instruments

Controls and instruments (fig. 4), will be maintained by second echelon maintenance personnel to the extent authorized in appendix II, and in accordance with instructions in paragraphs 87 through 98. Refer to paragraphs 66 and 67 for description, location, and illustration of controls and instruments.

Section VII. PNEUMATIC SYSTEM

106. General

A detailed description of the pneumatic system is contained in paragraphs 47 through 51.

107. Air Compressor

Second echelon maintenance for the air compressor consists of inspection and replacement of parts in accordance with the technical manual compressor and paragraphs 87 through 98 of this manual.

108. Air Supply Tank

Inspect and replace parts of air supply tank in accordance with technical manual for compressor and paragraphs 87 through 98 of this manual.

109. Lines and Hose

Second echelon maintenance of air lines and air hose (figs. 11, 12, and 14), will consist of inspection and replacement of parts in accordance with paragraphs 87 through 98 and appendix II. Replacement parts are listed in chapters 8 and 9.

110. Controls and Instruments

Controls and instruments (fig. 5), will be maintained by second echelon maintenance personnel to the extent authorized in appendix II, and in accordance with instructions in paragraphs 87 through 98. Refer to paragraphs 66 and 67 for description, location, and illustration of controls and instruments.

Section VIII. UTILITY SYSTEM

111. Storage Cabinets and Bench Tops

Second echelon maintenance of storage cabinets and bench tops consist of inspection and replacement of parts as authorized by appendix II.

112. Replacement

Inspect and replace parts in accordance with instructions in paragraphs 87 through 98. Refer to chapters 8 and 9 for replacement parts listing.

CHAPTER 7

SHIPMENT AND LIMITED STORAGE (SECOND ECHELON)

Section I. SHIPMENT WITHIN CONTINENTAL UNITED STATES

113. General

Before shipment of the shop set within the continental United States, perform the procedures for limited storage listed in paragraphs 121 through 127.

114. Preparation for Shipment

In addition to the instruction contained in paragraphs 56 and 57, perform the preparations listed in TM 9-2330-238-14.

115. Hoisting, Handling, and Loading

Refer to TM 9-2330-238-14.

116. Securing

Refer to TM 9-2330-238-14.

117. Methods of Transportation

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

118. 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

119. 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 9-230-238-14, for methods of securing, net handling, and boom procedures.

120. Preparation for Shipment

Waterproof the shop set, using methods outlined in TM 9-2380-23814, and in paragraphs 121 through 127 of this manual. Refer to paragraphs 24 and 80 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 strippable plastic material conforming to Military Specification MIL-B-12121, or Military Specification MIL-C-16555. The coating thickness should be uniform and 0.030 to 0.040 inch thick:

Section III. LIMITED STORAGE

121. 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.

122. 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 compressed air or by use .of 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 otherwise be accomplished.**

123. Complete Lubrication

Refer to paragraphs 85 and 86.

124. Preservation Application

Coat precision machined surfaces with preservative conforming to Military Specification MILP-21260, Grade 2, or with preservative conforming to Military Specification MILC-259, Type I, mixed with lubricating oil, in proportion of 1 part of preservative to 3 parts of lubricant.

125. Protection of 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 MILB-121, Grade A, in addition to the normal storage procedures outlined in the technical manual for the item.

126. Moisture Proofing

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

b. Place 213 units of desiccant, Military Specification MILB-3464, inside the 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 and taped before desiccant is removed from air-tight containers and installed in van. It takes on moisture rapidly.**

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

127. 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 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 and DD Form 314 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 equipment is mechanically sound and ready for immediate use.

CHAPTER 8

OPERATING INSTRUCTIONS (FIELD AND DEPOT MAINTENANCE)

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

128. General

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

129. Unloading and Uncrating New Equipment

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

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

***Caution*: Lift only at hoisting points provided when equipment is to be unloaded from heights above ground level (TM 9-2330-23814).**

b. Uncrating and Servicing New Equipment. Uncrating and servicing procedures will normally be those outlined in paragraphs 62 through 65. Additional information required for unloading specific items are contained in the technical manual for the item.

c. Depreservation. Procedures for depreservation of new equipment will normally be as outlined in paragraphs 62 through 65.

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.

130. 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 63 chronologically from top to bottom in rows, counterclockwise, around the interior of the shop, starting at the right rear.

Tool and Equipment Drawer Location Instrument Semitrailer Mounted C-8

Storage Drawer No.	Nomenclature			Total Qty
12	Altimeter, Pressure			1
12	Anvil, Jeweler's			1
12	Assembling Tool			1
12	Block, Bench, Mechanic's			1
22	Blower, Watchmaker's			1
22	Brazing and Soldering Set			1
22	Bridge, Resistance			1
22	Broach Set, Jeweler's: pivot, cutting			1
22	12 broaches, cutting style			1
18	Brush, Acid Swabbing			1
18	Brush, Artist's, rd taper point			2
18	Brush, Dusting, Bench			1
	Brush, dusting, watchmaker's			
	Bristle Grade	Lg Overall In.	Lg of Brush	
18	medium stiff	10 1/2	5/8	2
18	soft	4 1/4	1 5/8	2
	Burnisher, jeweler's			
	Blade		Lg In.	
22	Copper		6	1
22	steel		2 5/8	1
6	Caliper, Inside			1
19	Clamp, C			4

Tool and Equipment Drawer Location Instrument Semitrailer Mounted C-8-Continued.

Storage Drawer No.	Nomenclature		Total Qty
	Clamp, parallel toolmaker's		
Max Jaw Opening In		Lg In	
19	1 1/4	2	2
19	2 1/2	1-15/16	2
70	Countersink		1
70	Crimping Tool, Terminal, Hand		1
60	Cup, Alcohol		2
60	Cup, Oil, Jeweler's		2
	Cutter, glass		
60	Circle Cutting		1
60	Line Cutting		2
60	Cutter, Tube		1
	Die, thread cutting		
64	1-54 size		1
64	2-56 size		1
64	3-48 size		1
64	4-40 size		1
64	5-40 size		1
64	6-32 size		1
64	8-32 size		1
64	10-24 size, Die, Thread Cutting		1
64	1-72 size		1
64	2-64 size		1
64	3-56 size		1
64	4-48 size		1
64	6-40 size		1
64	8-36 size		1
64	10-2 size		1
64	Die Set, Metal Stamping		1
	Diestock		
	Od In	Lg Overall	
64	13/16	6 in min to 8 in max	1
64	2	23 in min to 28 in max	1
6	Dividers, Mechanic's: steel		1
68	Drill, Electric, Portable: 1/4 in		1
68	Drill, Hand: 0 to 1/4 in		2
67	Drill Set, Twist: straight rd shank, number series, 1 to 60 size range		2
67	straight shank, No. 61 to 80		2
67	Faceshield, Industrial:		2
67	File Set, Hand		1
43	Gage, Screw Pitch		1
43	Gage, Spring Tension		1
57	Glass, Loupe		1
57	Graver		1
59	Gun, Fluid, Direct Delivery		i
57	Hammer, Hand		1
43	Hydrometer, Graduated Scale:		1
43	Indicator, Dial		1
	Key, socket head screw		
43	Major Dia In: 0.060		1
43	Major Dia In: 0.069		1
43	Major Dia In: 0.076		1
43	Major Dia In: 0.094		1
43	Major Dia In: 0.110		1
44	Level, Precision, Master		1
35	Light, Extension		1

Tool and Equipment Drawer Location Instrument Semitrailer Mounted C-8-Continued.

Storage Drawer No.	Nomenclature	Total Qty
50	Magnifier	1
57	Mallet	1
58	Microscope, Optical	1
38	Multimeter	1
33	Multimeter	1
60	Needle, Syringe Oiler	2
60	Nippers, End Cutting	1
60	Oiler, Hand	1
60	Oiler Set	1
	Pliers	
45	Flat Nose	1
45	Snipe Nose	1
12	Press, Lead Seal, Hand	1
59	Remover, Hand, Watchmaker's	1
68	Rotary Tool Kit, Electric	1
11	Screwdriver, Offset	2
62	Screwdriver Set, Jeweler's	1
62	Screwplate	1
30	Shears, Metal Cutting, Hand	1
30	Shears, Thinner's Hand	1
34	Soldering Gun	2
45	Square, Combination: 12 in	1
60	Staking Tool Set, Jewel	1
61	Stone, Sharpening: combination, mounted	1
	Stone sharpening-natural	
61	Chalcedony silicia Ark, hard, 3 in	1
61	Chalcedony silica Ark, hard, 3 1/2 in	1
61	Chalcedony silica Ark, hard 3 1/2 in	1
61	Jasper, hard, 3 in lg overall	1
61	Novaculite, oil-treated, hard, 3 1/2 in.	1
8	Striper, Wire, Hand	1
8	Stroboscope	1

Tap, thread cutting

No. thds per in	Lg. overall In.	
14	1-64	1 11/16 1
14	2-56	1 3/4 1
14	3-48	1 13/16 1
14	4-40	1 7/8 1
14	5-40	1 15/16 1
14	6-32	2 1
14	8-32	2 1/8 1
14	10-24	2 3/8 1

Tap, thread cutting

No. thds per in.	Lg Overall In.	
14	0-80	1 5/8 1
14	1-72	1 11/16 1
14	2-64	1 3/4 1
14	3-56	1 13/16 1
14	4-48	1 7/8 1
14	6-40	2 1
14	8-36	2 1/8 1
14	10-32	2 3/8 1

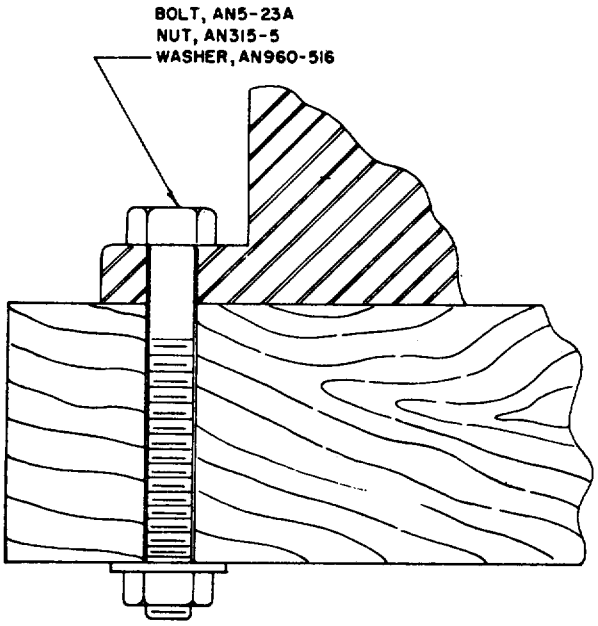
Tool and Equipment Drawer Location Instrument Semitrailer Mounted C-8-Continued.

Storage Drawer No.	Nomenclature	Total Qt
	Tape, measuring	
	Tweezers, craftsman's	
6	Curved Point	1
6	Hairspring	1
6	Hollow Jaw	1
6	Pivot Straightening	1
6	Slim Point	1

b. Location of Mounted Equipment. 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 21, 22, and 23 for floor plan of shop set.

c. Separator, Water and Oil. The water and oil separator is wall mounted as shown in figure 21. Fabrication and mounting of the components are shown in figures 15 and 16.

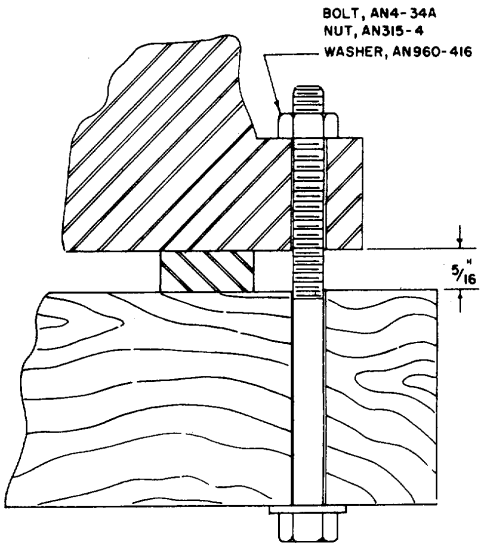
d. Bench Mounted Equipment. The drill press, instrument turn table, arbor press, 30 inch manometer,



TYPICAL DRILL PRESS MOUNTING

Figure 30. Typical drill press mounting.

and scorsby table are bench mounted (fig. 21). Typical mounting methods are shown in figures 30 through 34.



TYPICAL TURN TABLE MOUNTING

Figure 31. Typical turntable mounting.

e. Desk Chairs. Desk chairs are mounted on either side of the shop (fig. 21). Typical mounting method is shown in figures 35 and 36.

f. Jeweler's Bench. The jeweler's bench is mounted on the right side, center, of the shop (fig. 22). Mounting and security devices are shown in figures 37 through 47.

g. Watchmaker's Lathe. The lathe is mounted on top of the jeweler's bench (fig. 22). Mounting details are shown in figure 48.

h. Altitude and Temperature Chamber. The altitude and temperature chamber is mounted at the left center of the shop (fig. 21). Mounting plates are shown in figures 49 through 51.

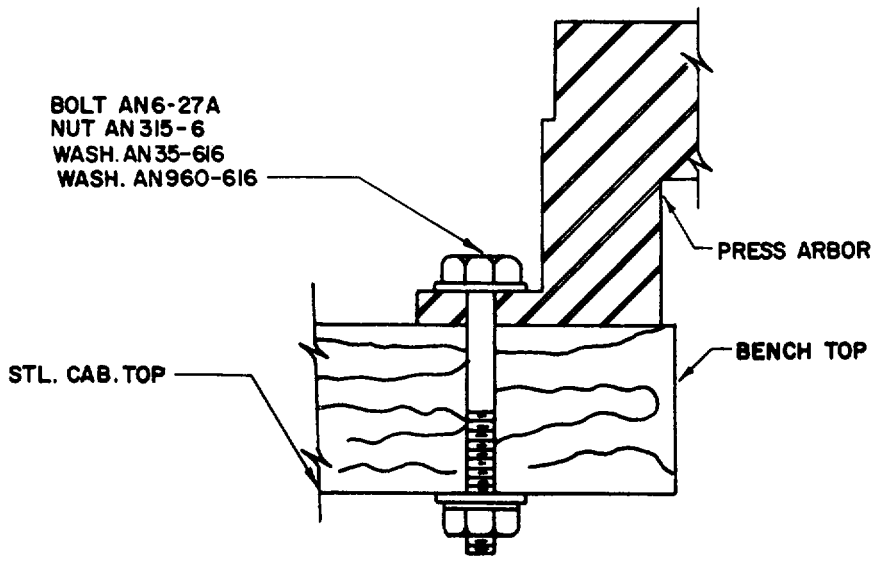


Figure 32. Typical arbor press mounting method.

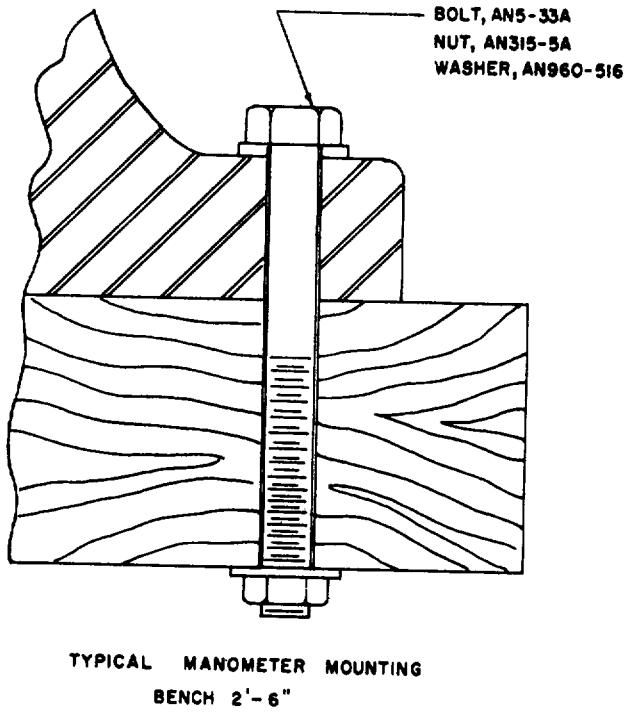


Figure 33. Typical manometer mounting.

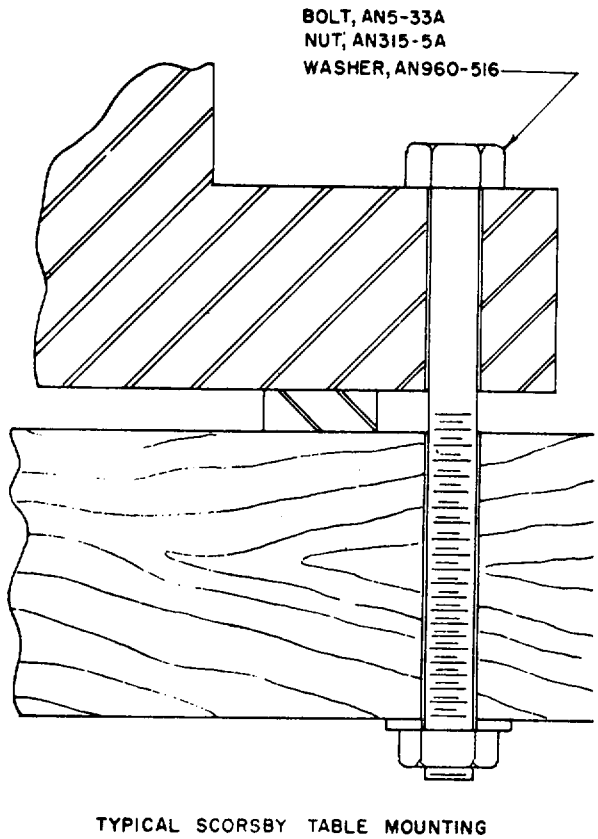
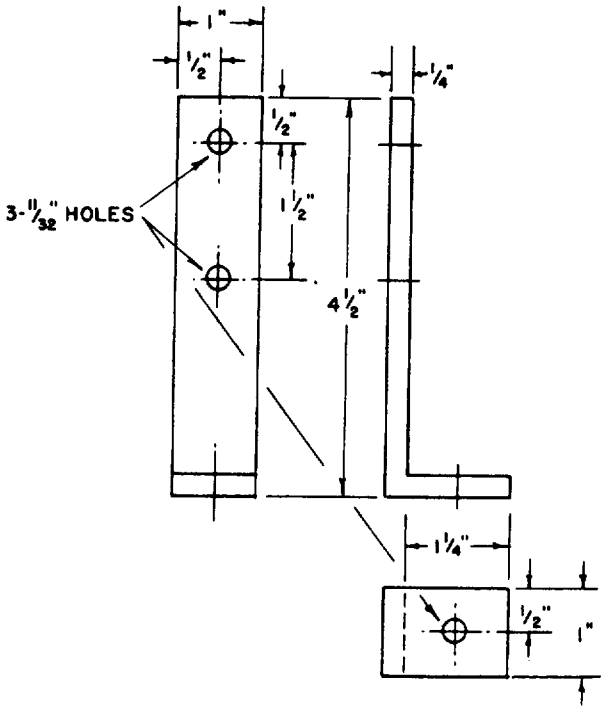
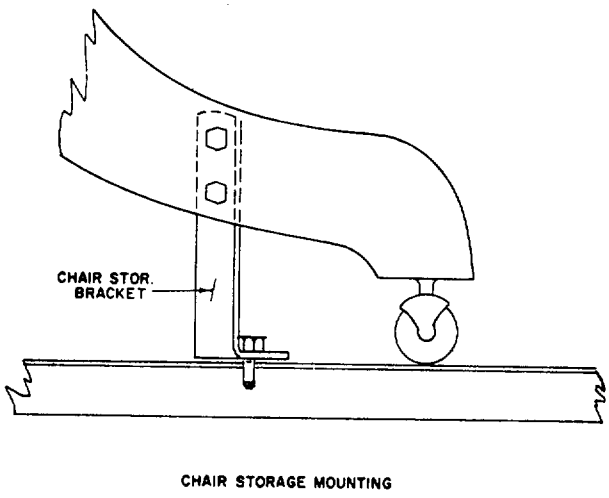


Figure 34. Typical scorsby table mounting.



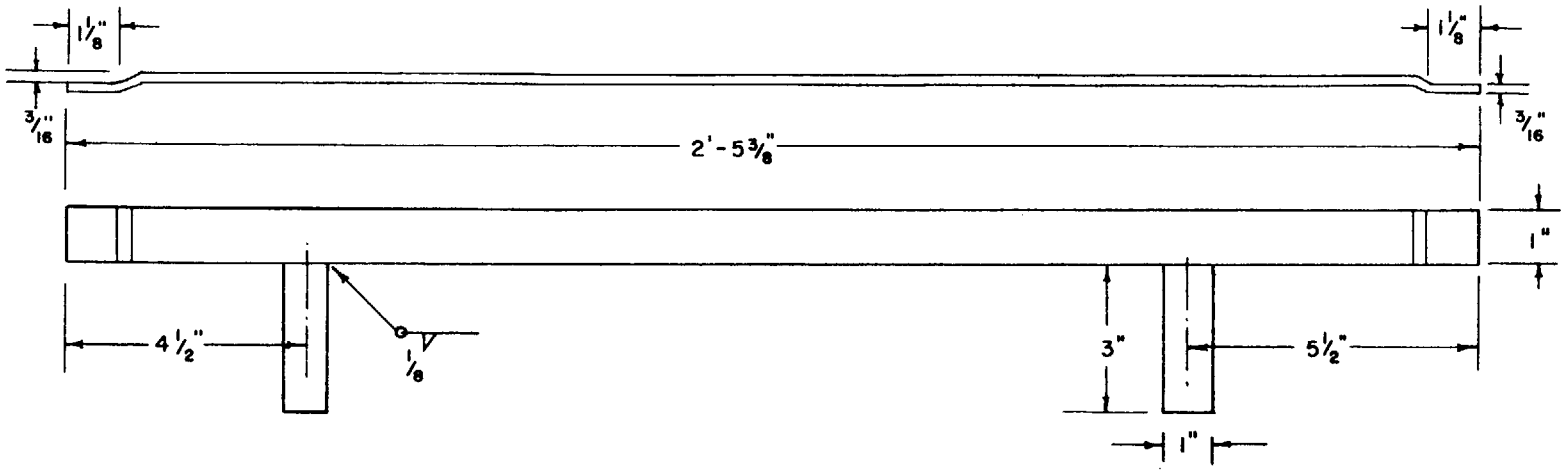
CHAIR STORAGE BRACKETS
STEEL FLAT STOCK

Figure 35. Chair storage bracket.



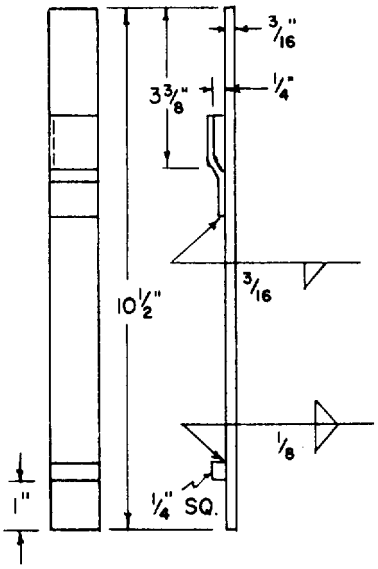
CHAIR STORAGE MOUNTING

Figure 36. Chair storage mounting.



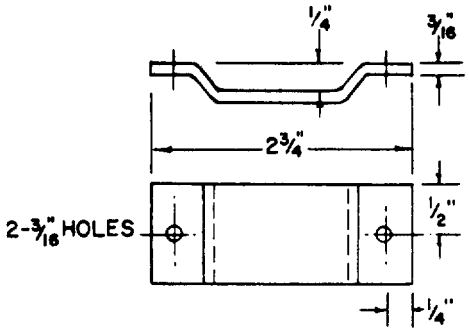
DRAWER CENTER LOCKING BAR, STEEL FLAT STOCK

Figure 37. Center drawer locking bar.



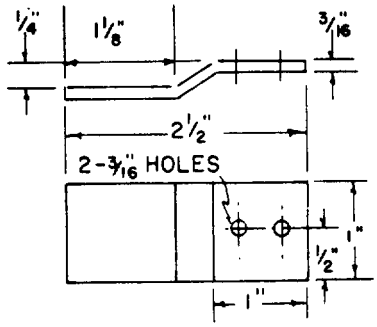
LEFT SIDE

Figure 38. Left drawer locking bar.



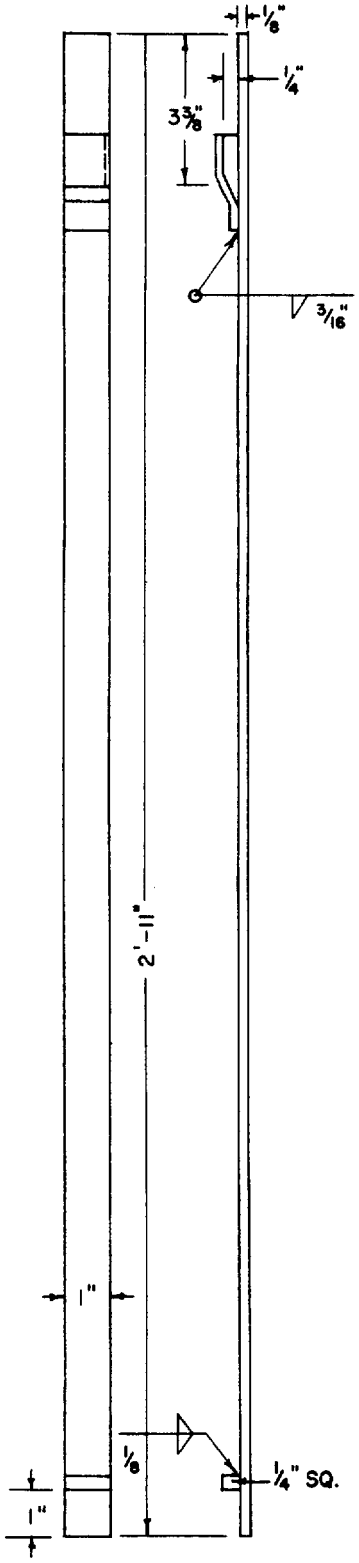
BOTTOM CLIPS

Figure 39. Bottom clip, drawer locking bar.



TOP CLIPS

Figure 40. Top clip, drawer locking bar.



RIGHT SIDE LOCKING BAR, STL.FLAT STOCK

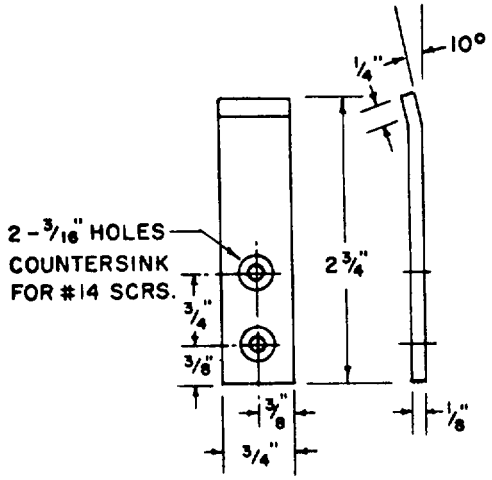


Figure 42. Storage clip, top.

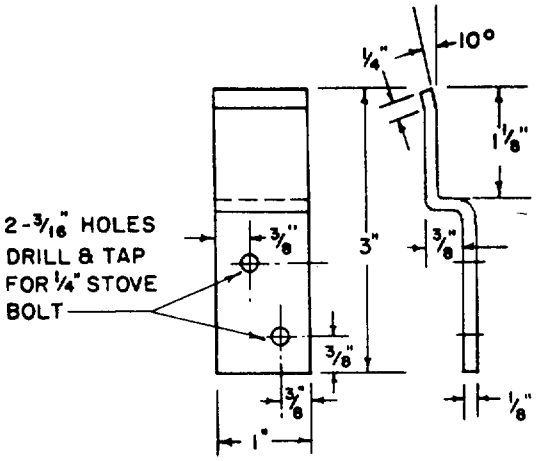


Figure 43. Storage clip, center.

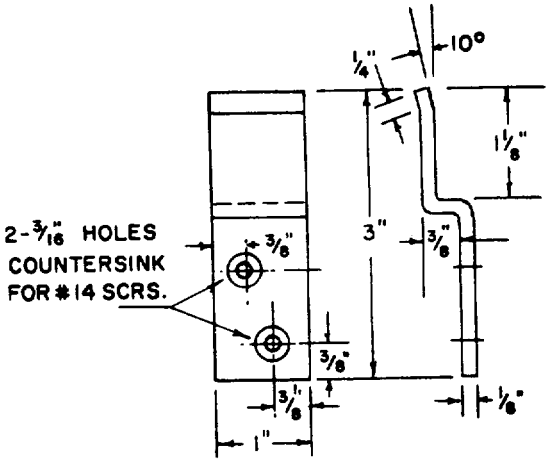
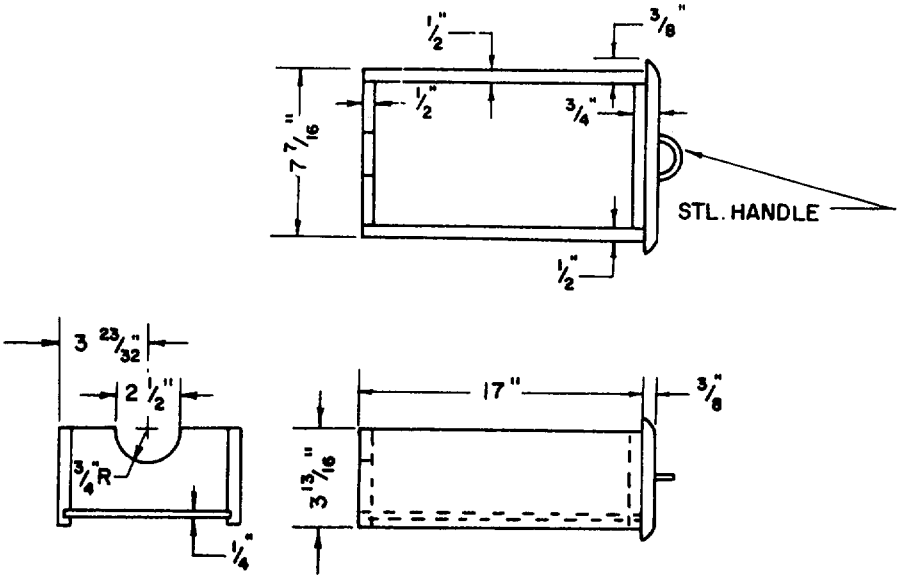
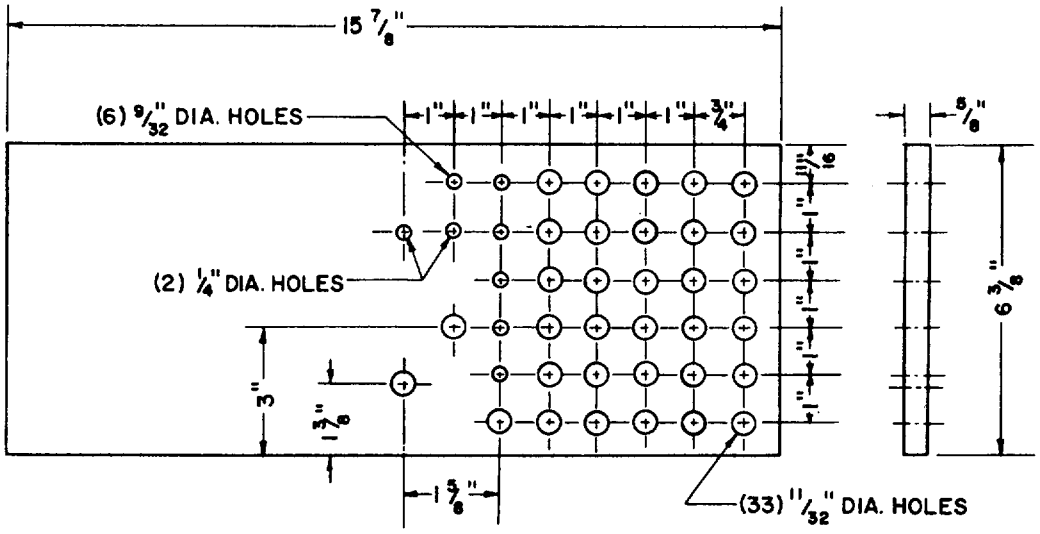


Figure 44. Storage clip, bottom.



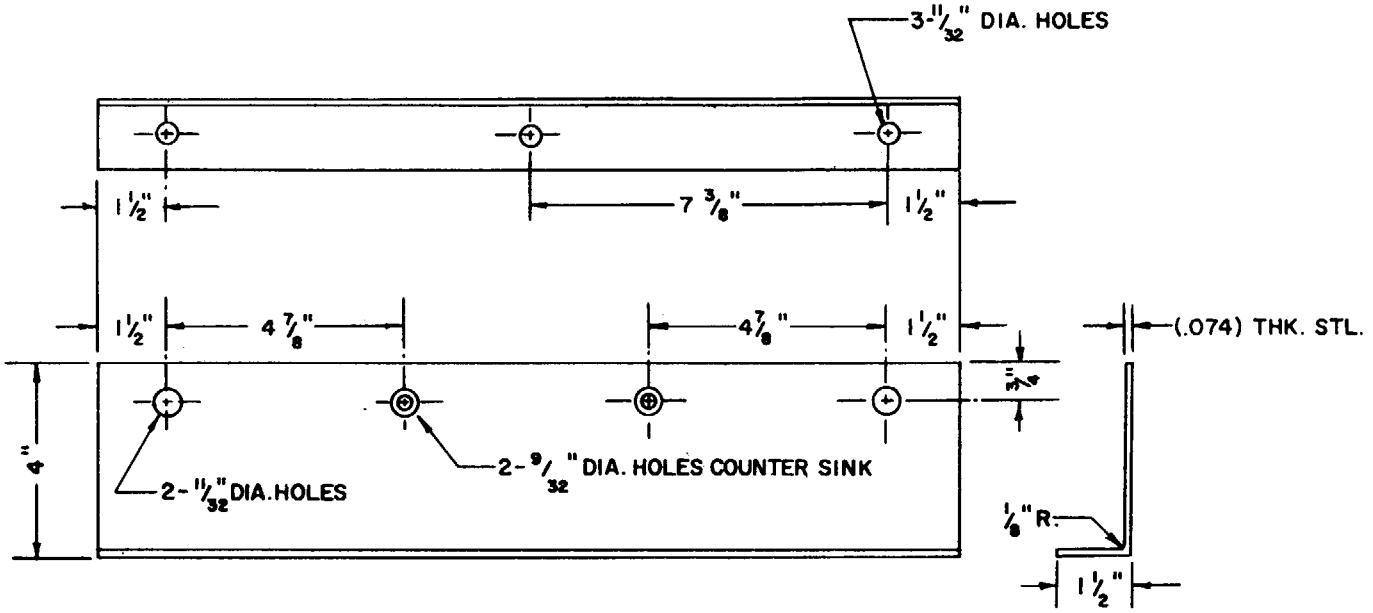
DRAWER
3/8" PLYWOOD

Figure 45. Plywood drawer.



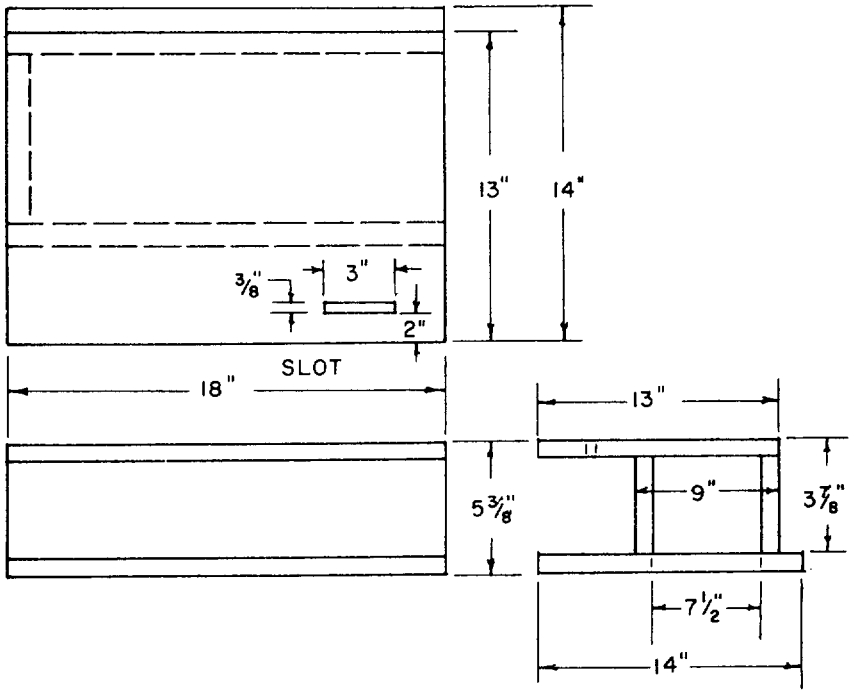
DRAWER TRAY
3/"PLY WOOD

Figure 46. Drawer tray.



JEWELERS BENCH MTG.

Figure 47. Jeweler's bench mounting.

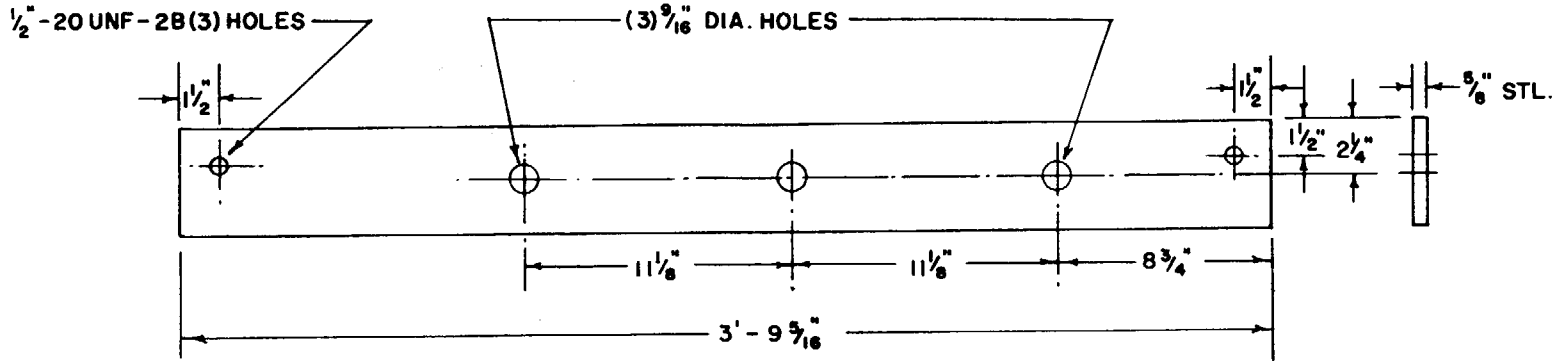


LATHE STAND, 3/4" PLYWOOD

Figure 48. Lathe stand.

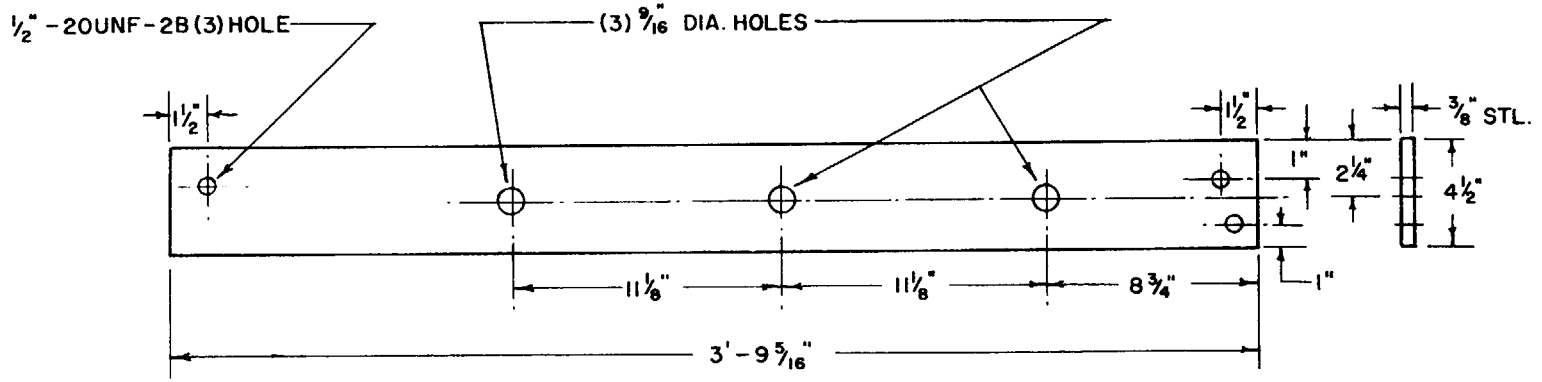
i. Panel Storage Chest. The panel storage chest is mounted on the forward platform of the shop (figs. 21 and 22). Mounting details and security devices are shown in figures 52 through 60.

j. Manometer, 61-Inch. The 61-inch manometer is mounted at the forward center of the shop interior (fig. 21). Installation and mounting details are shown in figures 61, through 63.



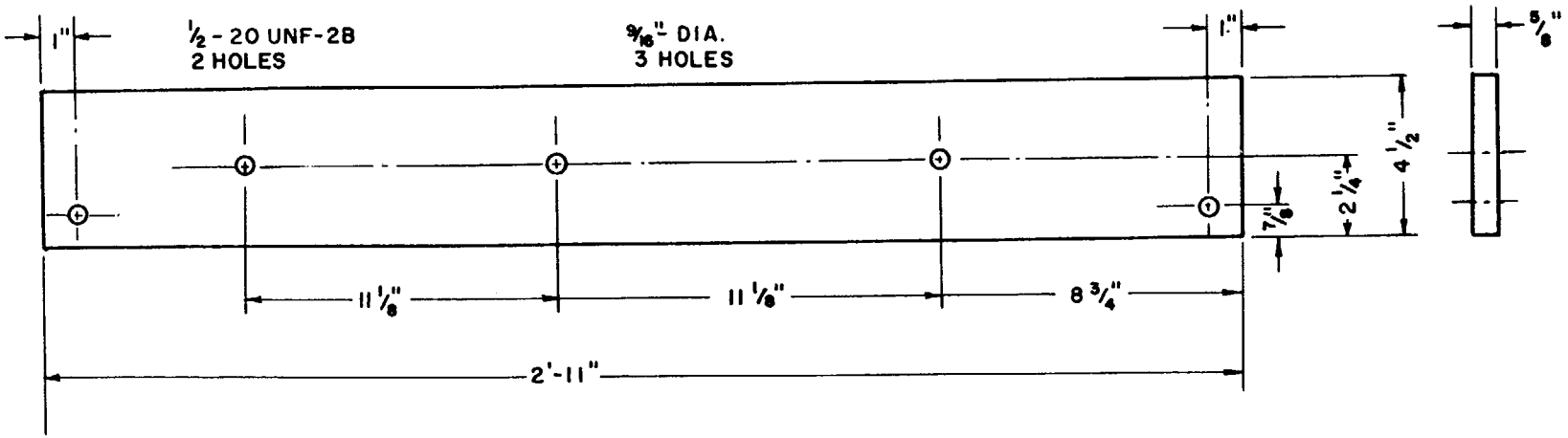
MOUNTING PLATE, FRONT-ALT. & TEMP. CHAMBER

Figure 49. Front mounting plate, 4 1/2 X 45 5/16 inch.



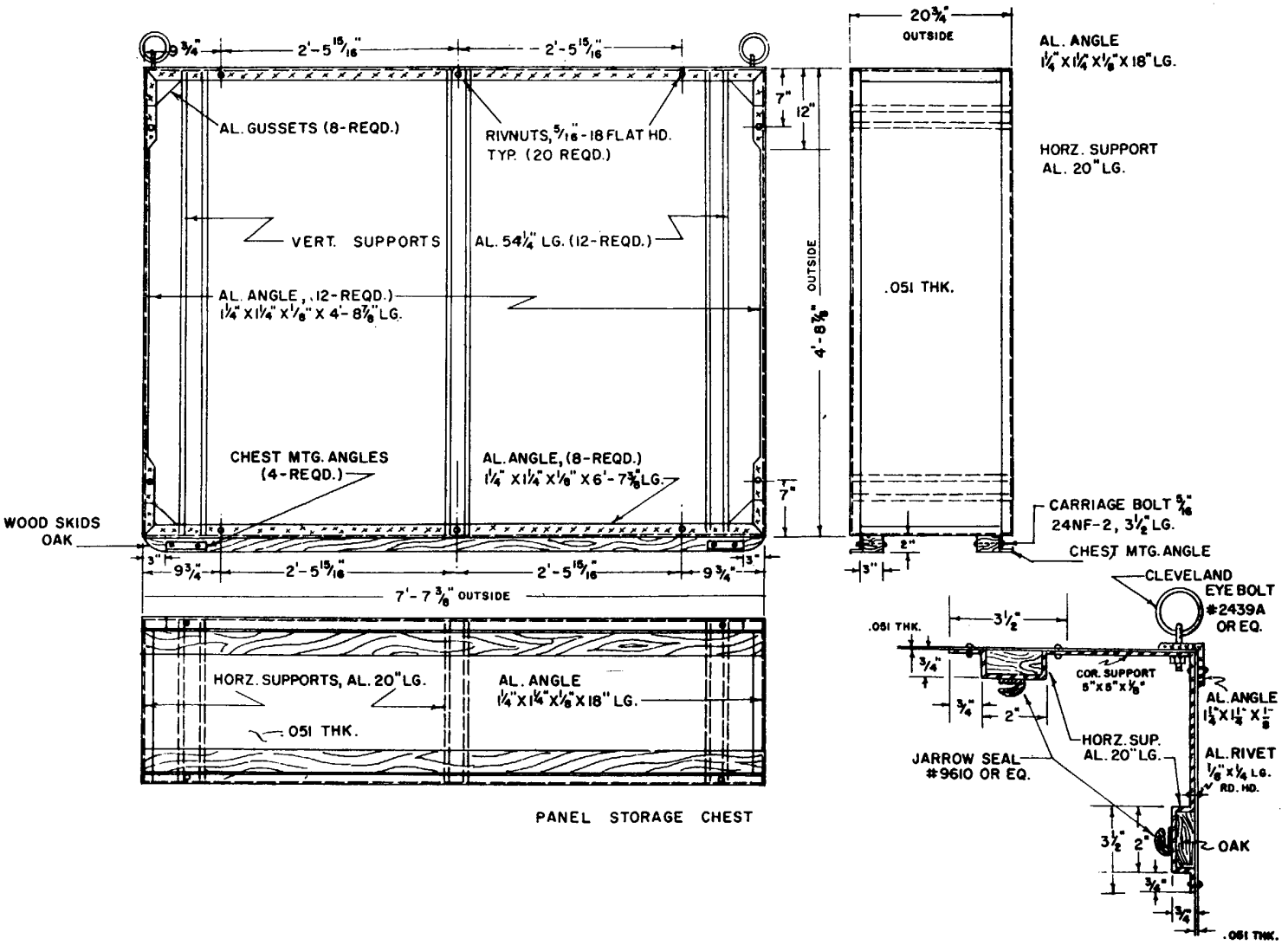
MOUNTING PLATE, REAR- ALT. a TEMP. CHAMBER

Figure 50. Rear mounting plate, 4 1/2 X 45 5/16 inch.



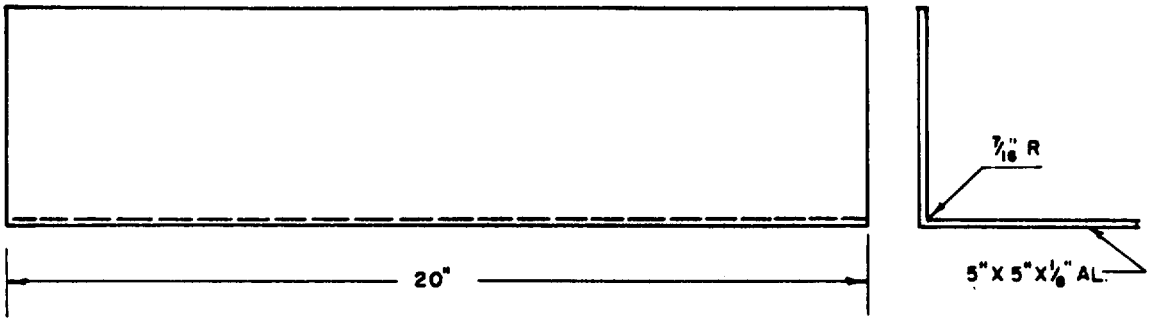
MTG. PL., ALT. a TEMP. CHAMBER

Figure 51. Mounting plates, 4 1/2 X 35 inch.



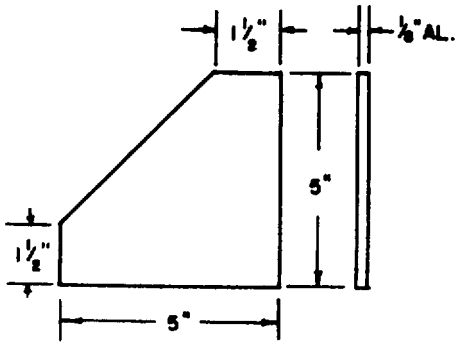
PANEL STORAGE CHEST

Figure 52. Panel storage chest.



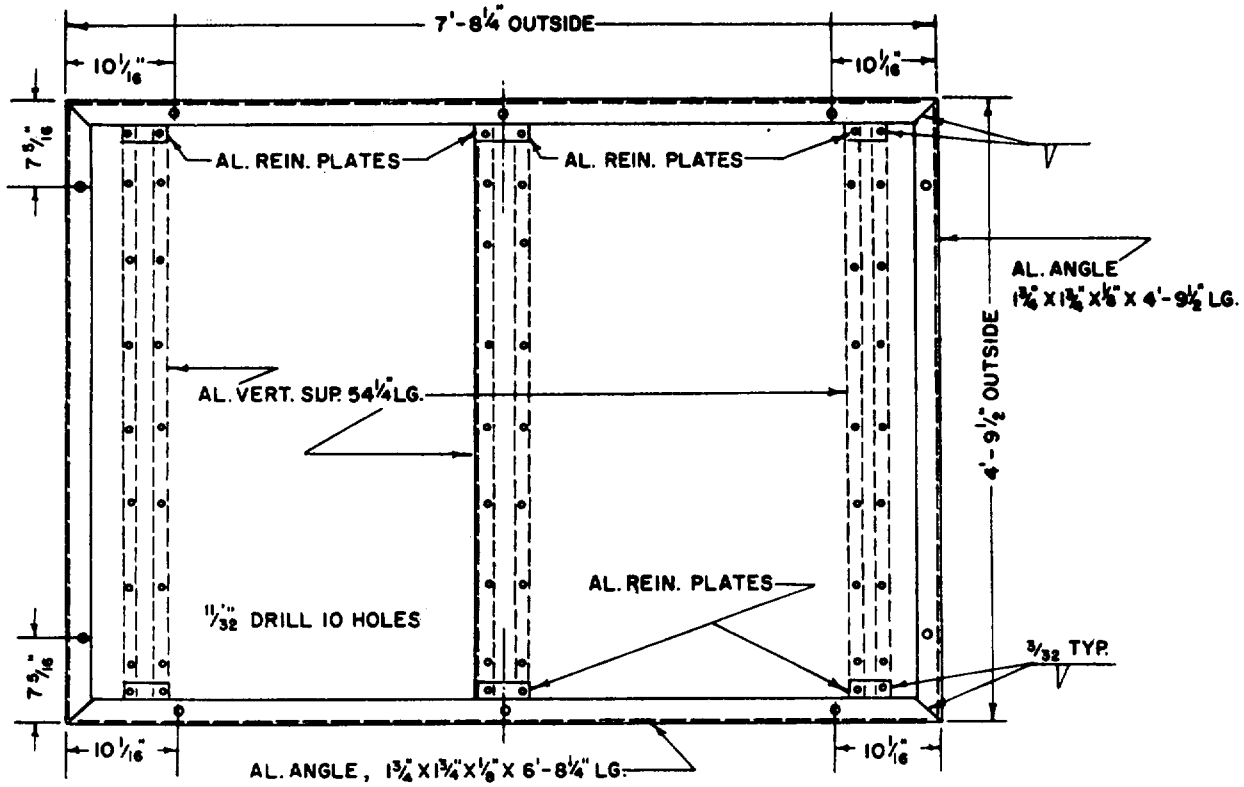
CHEST CORNER SUPPORT

Figure 53. Chest corner support.



GUSSETS

Figure 54. Corner Gusset.



PANEL STORAGE CHEST LID

Figure 55. Panel storage chest lid.

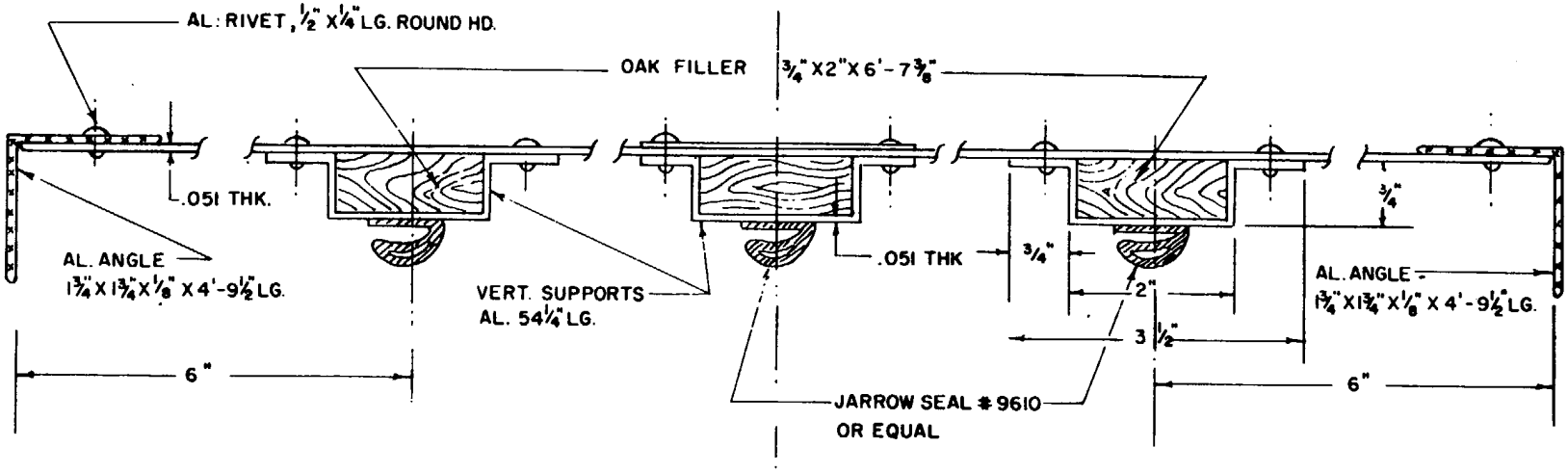
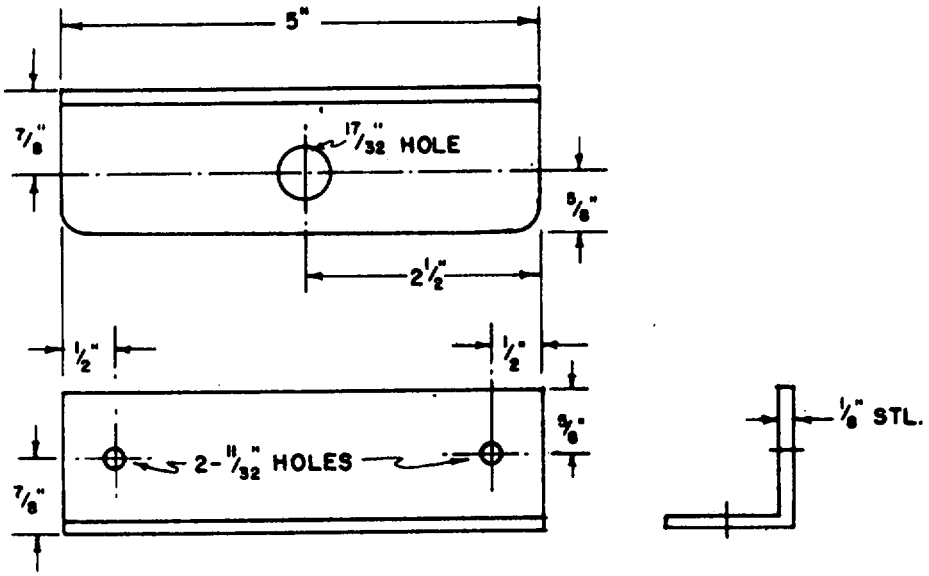
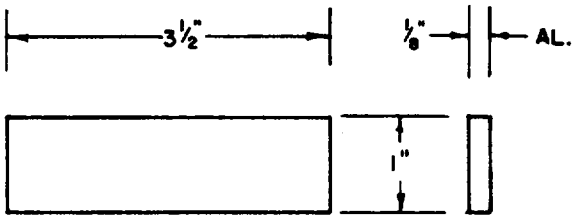


Figure 56. Sectional view, panel storage chest lid.



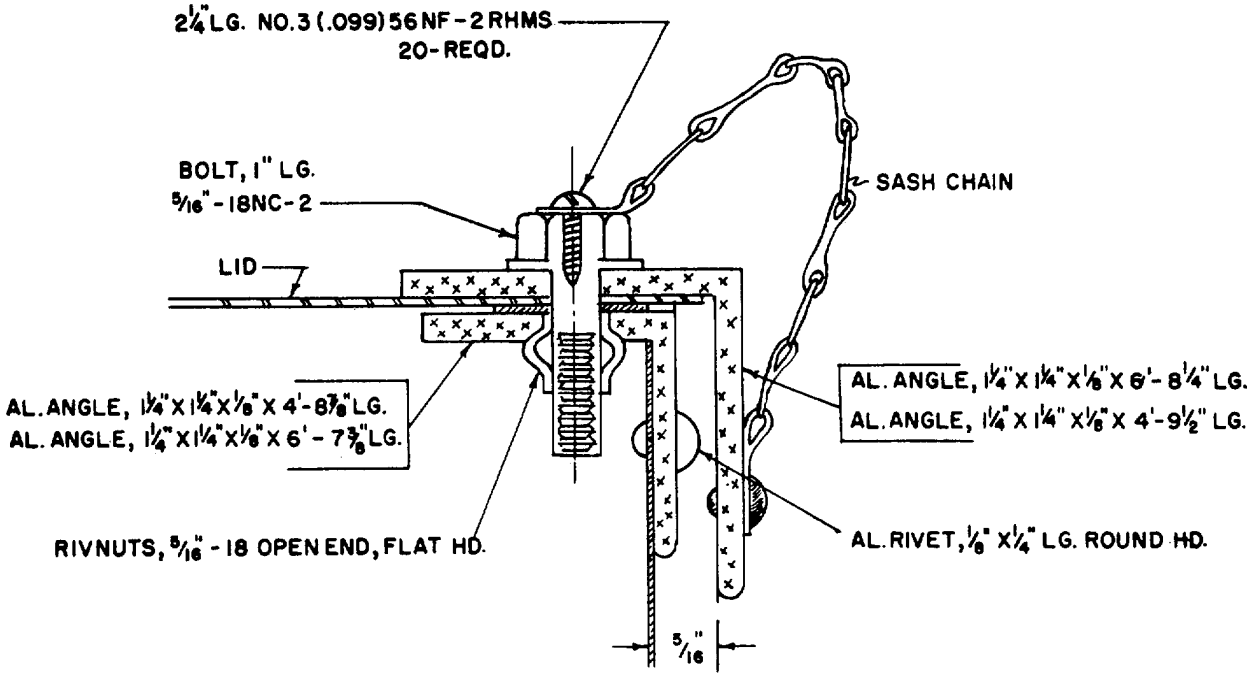
CHEST MOUNTING ANGLES

Figure 57. Chest mounting angled.



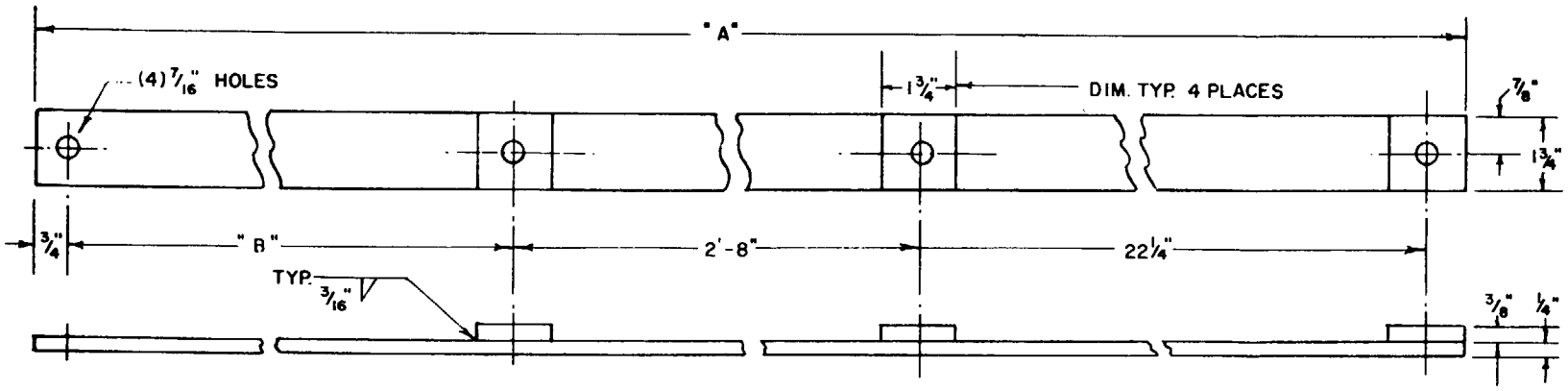
REINFORCEMENT PLATE

Figure 58. Reinforcement plate.



STORAGE CHEST MOUNTING

Figure 59. Lock bolt, storage chest mounting.



PANEL CHEST TIE DOWN BRACKET – STEEL, ① & ②

	DIM. "A"	DIM. "B"
①	7'-1	2'-5
②	5'-5	10"

Figure 60. Panel storage chest tiedown bracket.

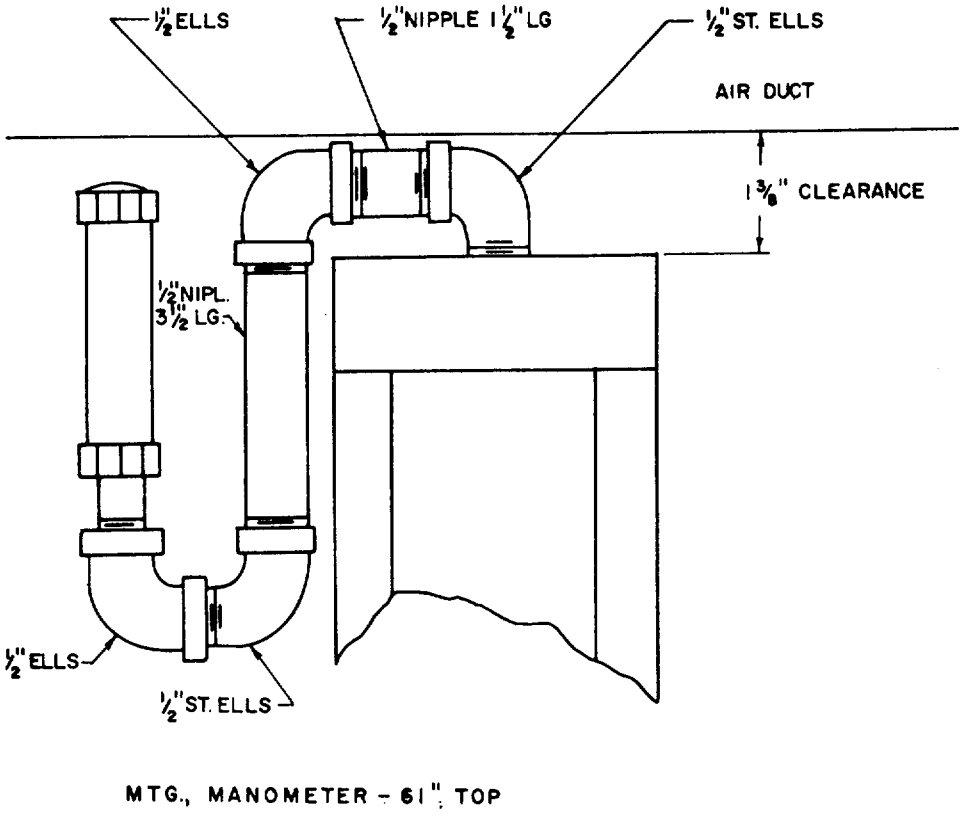


Figure 61. Manometer mounting, top.

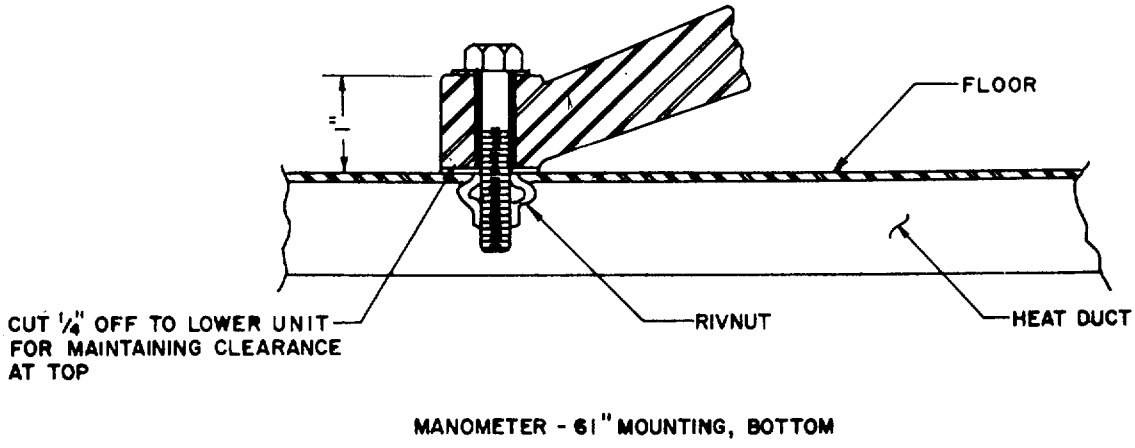
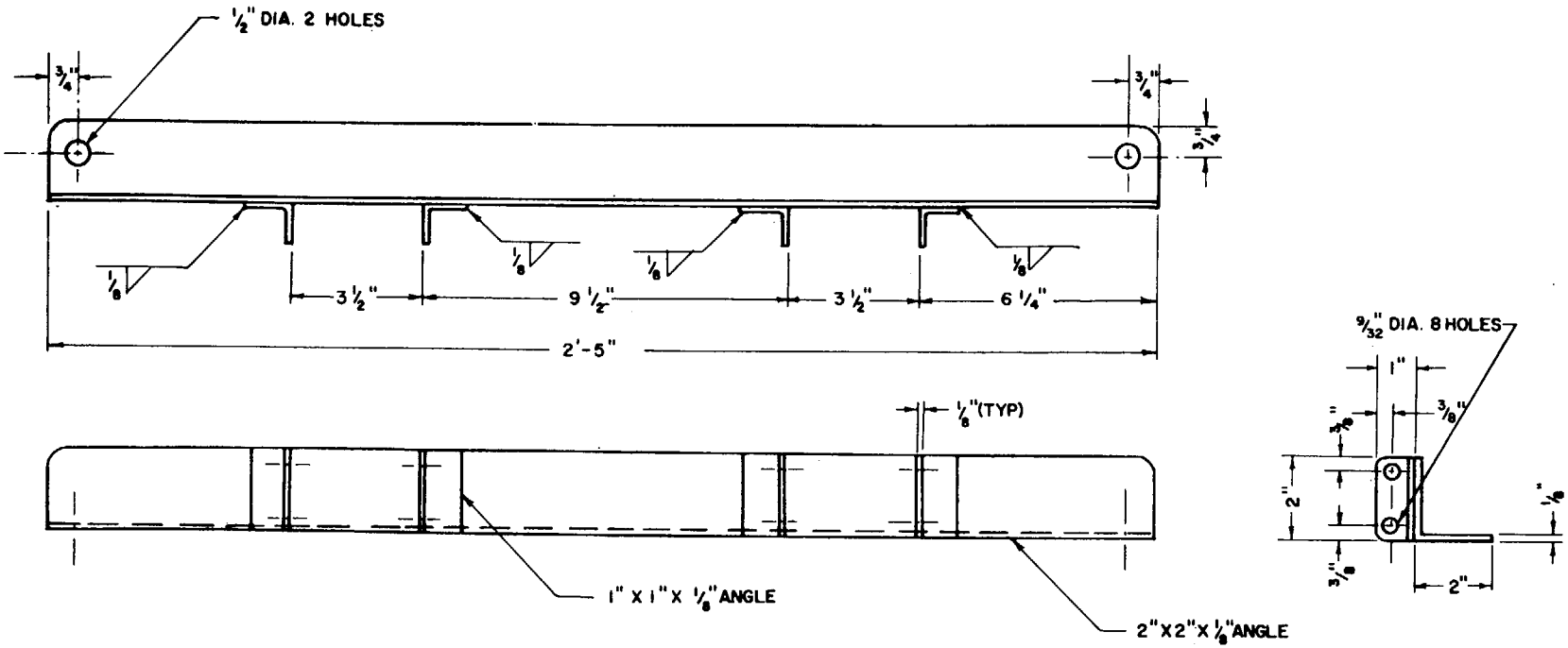


Figure 62. Manometer mounting, bottom.



MANOMETER-61" MOUNTING BRACKET

Figure 63. Manometer mounting bracket.

k. Tester, Torque Wrench. The torque wrench tester is mounted on the forward end of the storage cabinet at the right rear of the shop (fig. 21). The mounting plate is shown in figures 64 through 67.

l. Compressor, Reciprocating, Power Driven. The compressor and electric motor are mounted on the forward platform of the shop (fig. 21). Mounting details are shown in figures 9 and 10. Fabrication of mounts is shown in figure 68. The air tank for the compressor is mounted underneath the forward floor of the shop (figs. 18 and 19). Fabrication of mounts and mount installations are shown in figures 69 and 70.

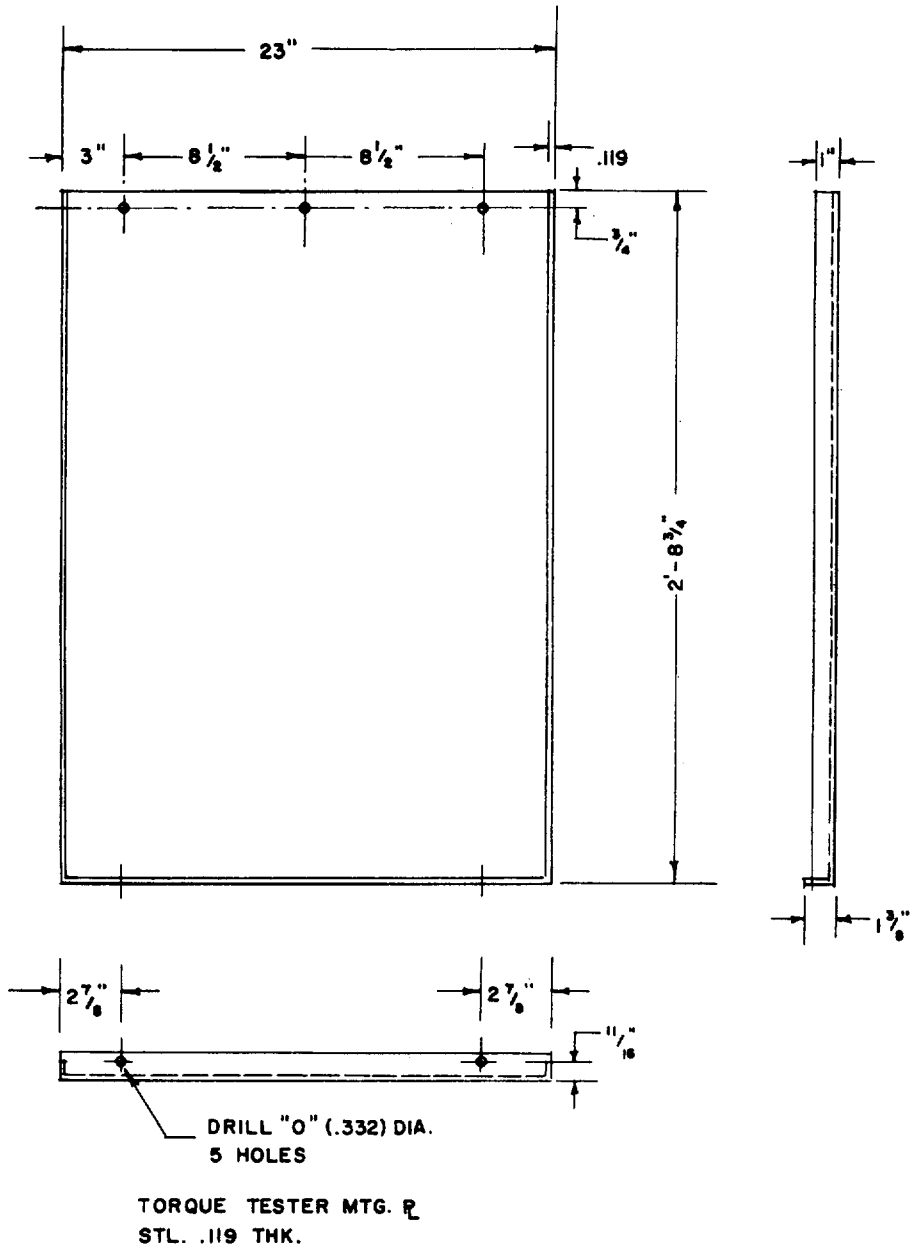
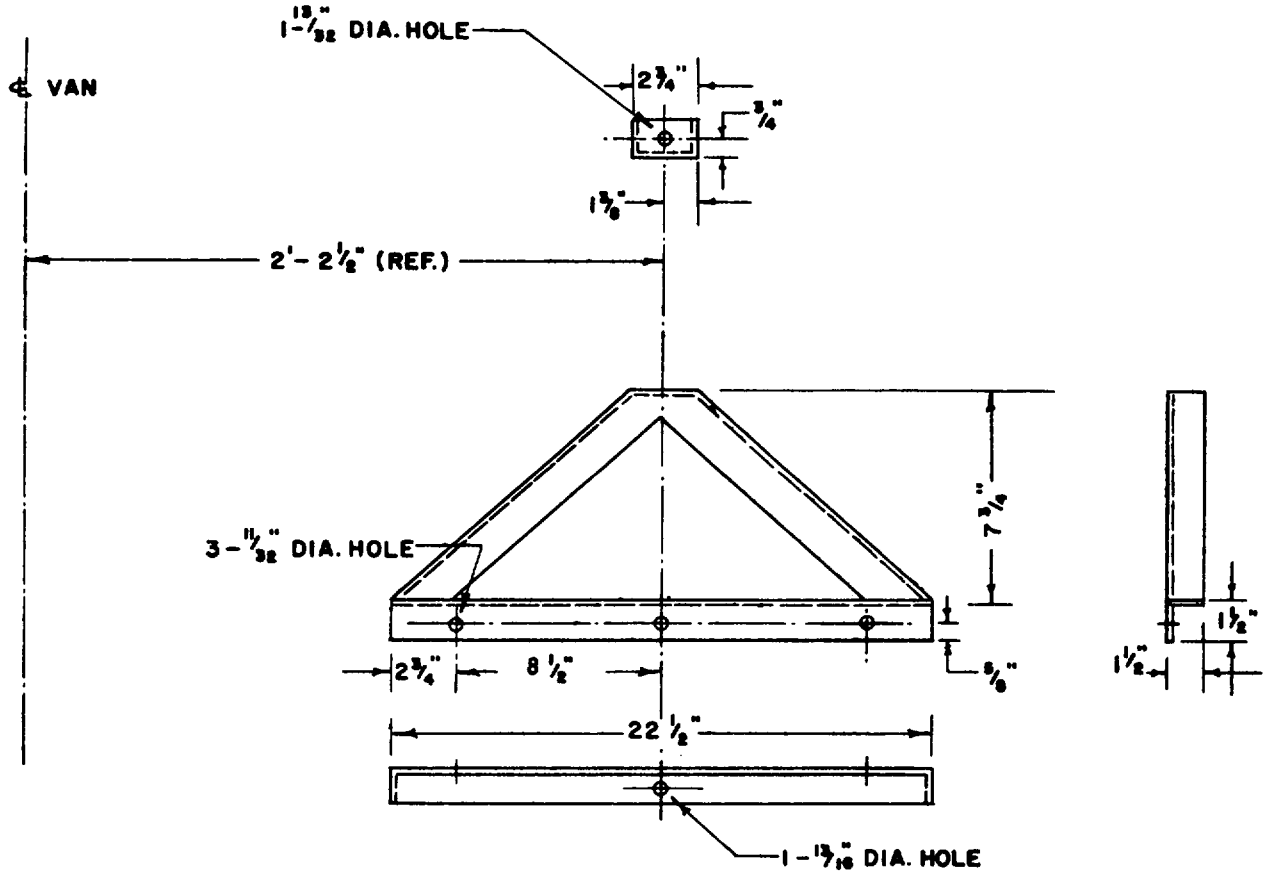
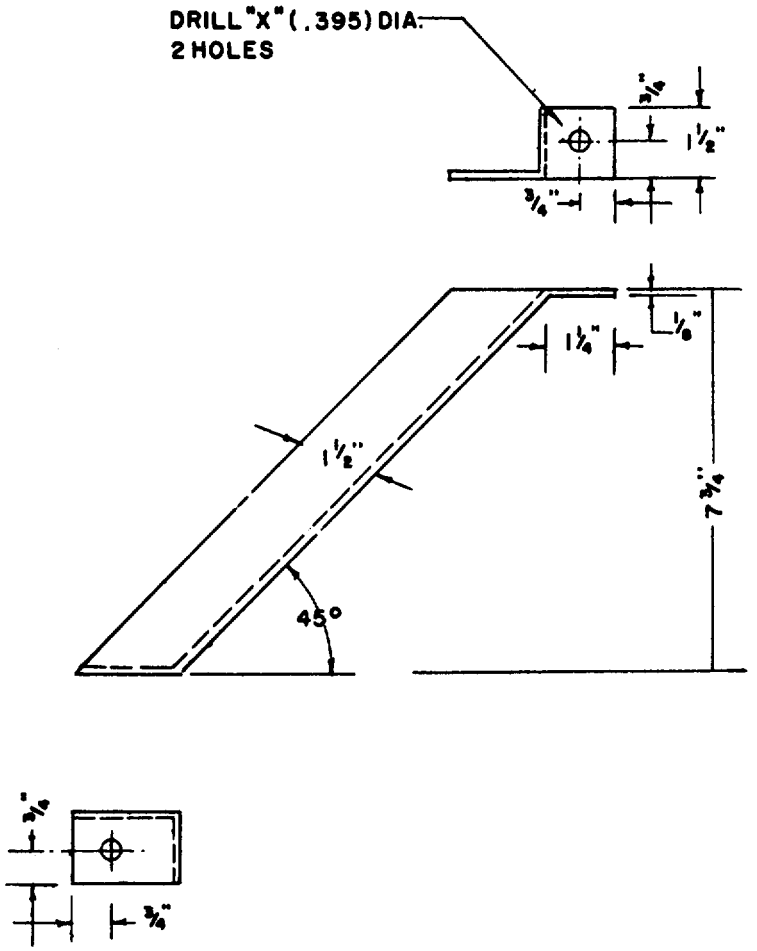


Figure 64. Torque tester mounting plate, top view.



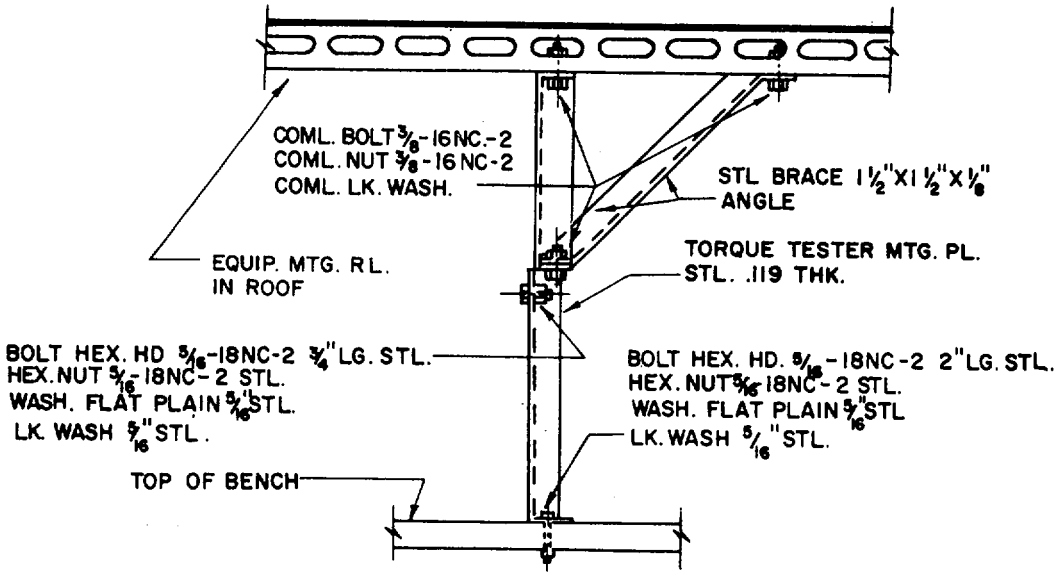
TORQUE TESTER MTG. PL.
1 ½" X 1 ½" X 1/8" STL. ANGLE

Figure 65. Torque tester mounting plate bracket.



TORQUE TESTER MTG.PLATE 1 ½ " X 1 ½" X 1/8" STL. ANGLE

Figure 66. Torque tester mounting brace.



TORQUE TESTER MTG. ASS Y

Figure 67. Torque tester mounting assembly.

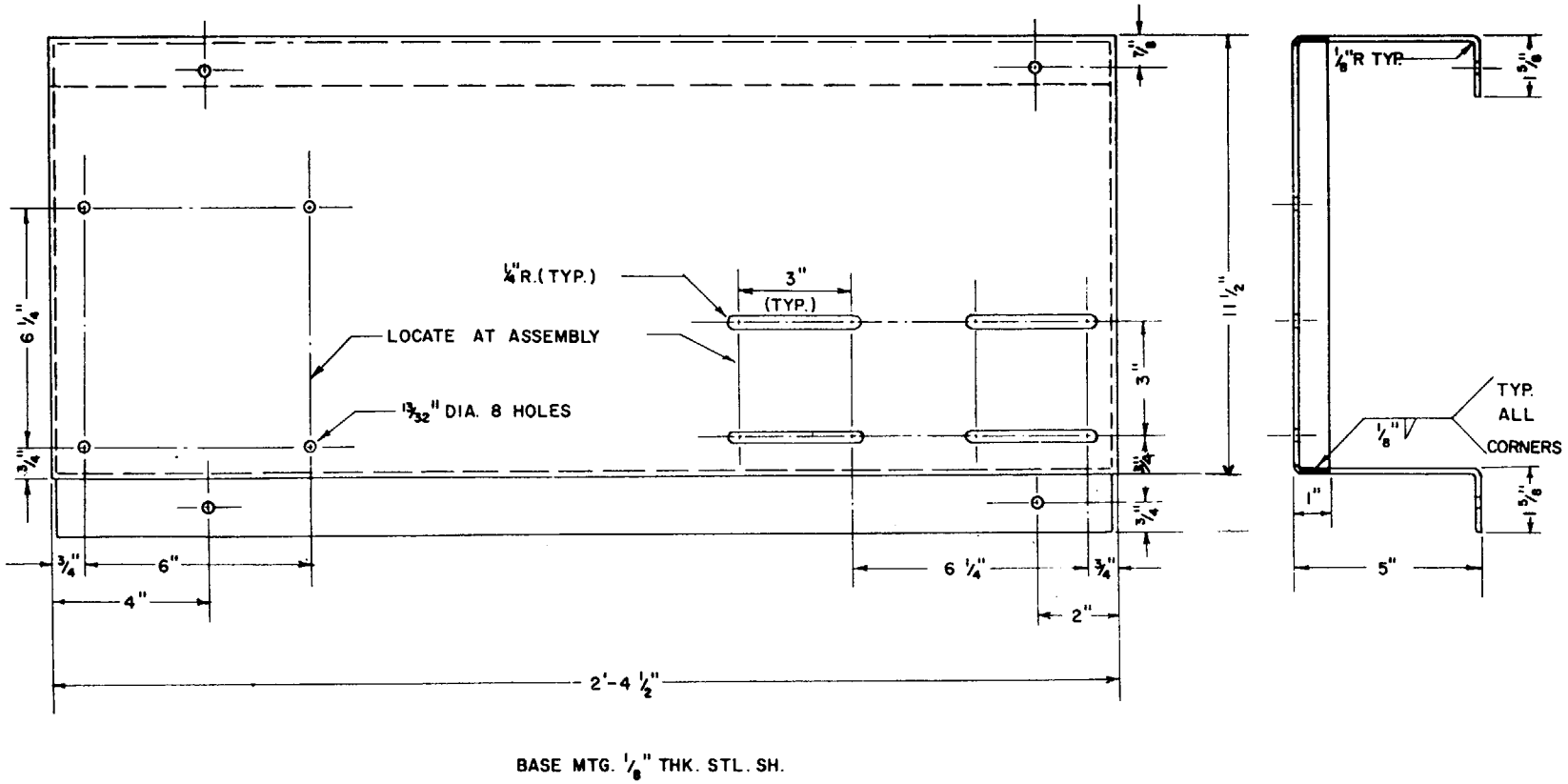


Figure 68. Details, compressor mounting.

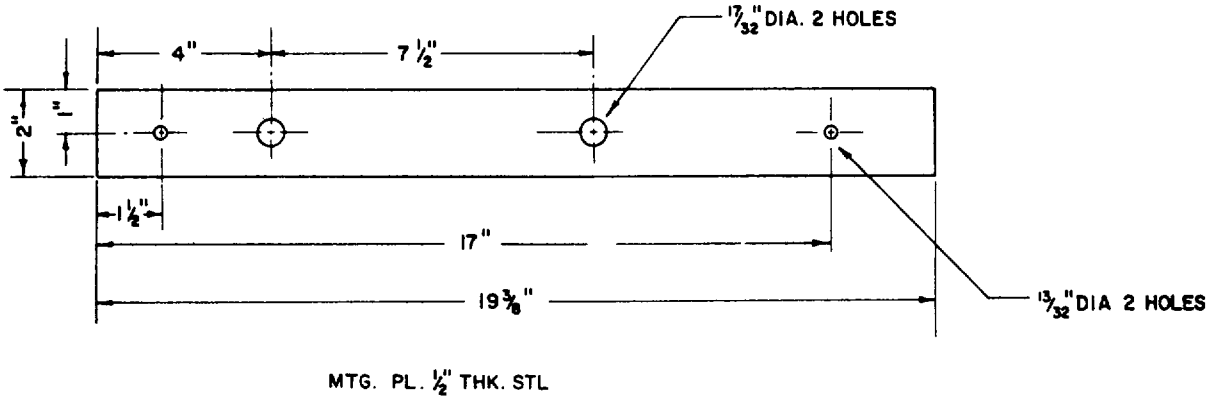
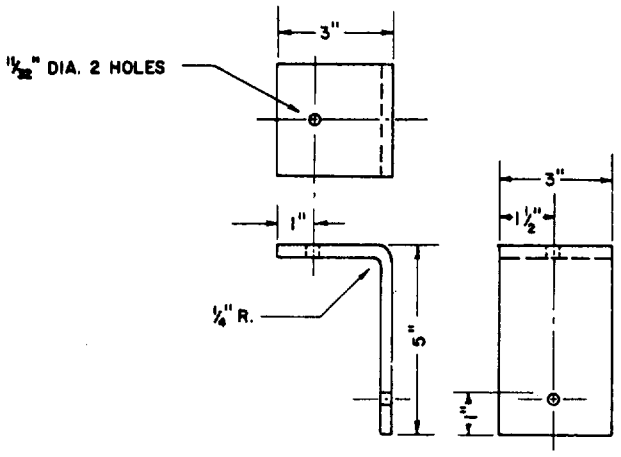


Figure 69. Mounting plate, compressor tank.



MTG. PL. 1/4 THK. STL. PL.

Figure 70. Mounting bracket, compressor tank.

m. 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 71. Additional security of the bench tops is obtained when bench mounted equipment is installed as the mounting bolts for the equipment pass through the bench top and the top of the storage cabinet (figs. 30 through 34).

n. Cabinet, Storage. Storage cabinets are floor mounted and bolted together when adjacent. Typical mounting details are shown in figures 72 through 75.

o. Insulated Side Panels. The shop is equipped with insulated side panels to insure weather proof and air tight seals around side-walls when folding sides are opened. Six panels are provided for each side (4 straight panels and 2 corner panels), and are stored, 1 set of 6, in each of the chests (fig. 22), when not in use or in transit. A special wrench is provided to install or detach the panels. Installation or detachment can be accomplished by 2 men in a few minutes. Figure 29 illustrates the installation of the panels.

p. 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 hot weather, ventilation, equipment should be inspected as often as practical to insure proper operation of the equipment and the operator's comfort. Details of ventilation facilities are shown in TM 9-2330-238-14.

q. Air Conditioning. An air conditioner unit is installed by the manufacturer at the approximate location shown in figure 22. The operating instructions and switches are with the unit. Manufacturer's literature should be used for operation and maintenance.

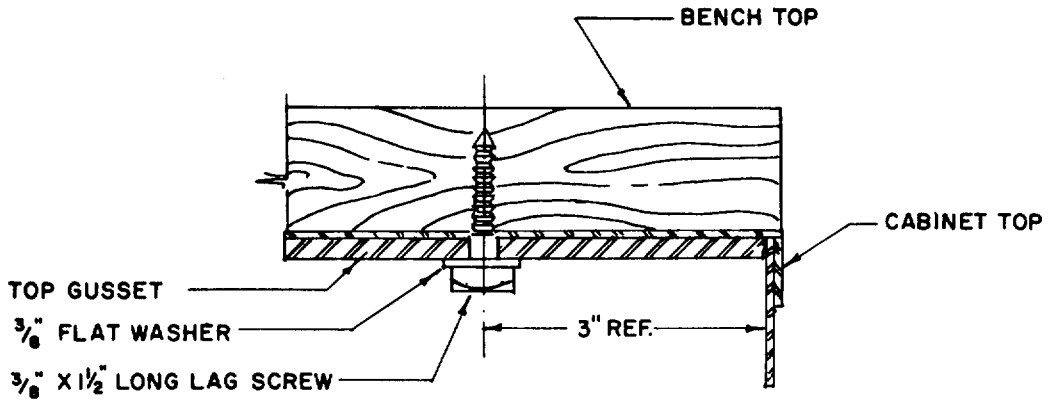


Figure 71. Bench top mounting, typical installation.

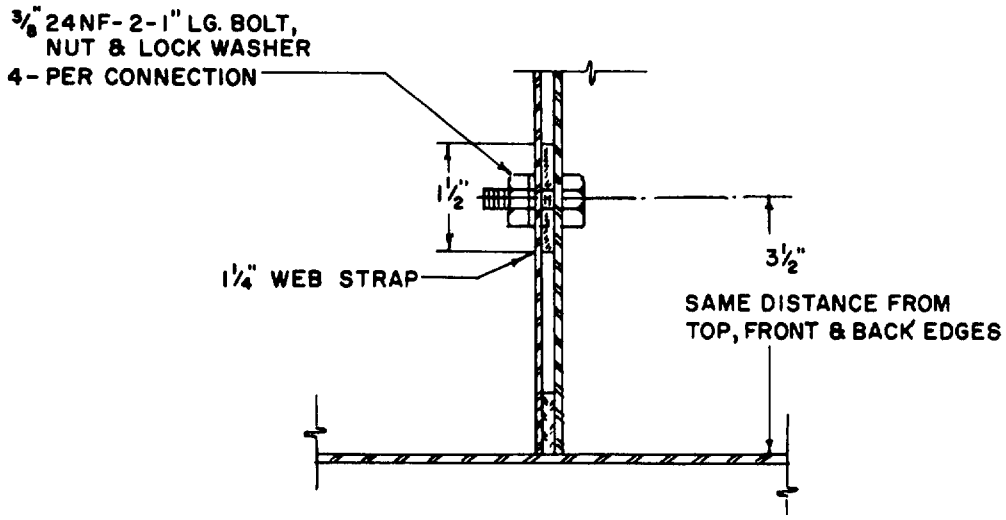


Figure 72. Mounting adjacent cabinets.

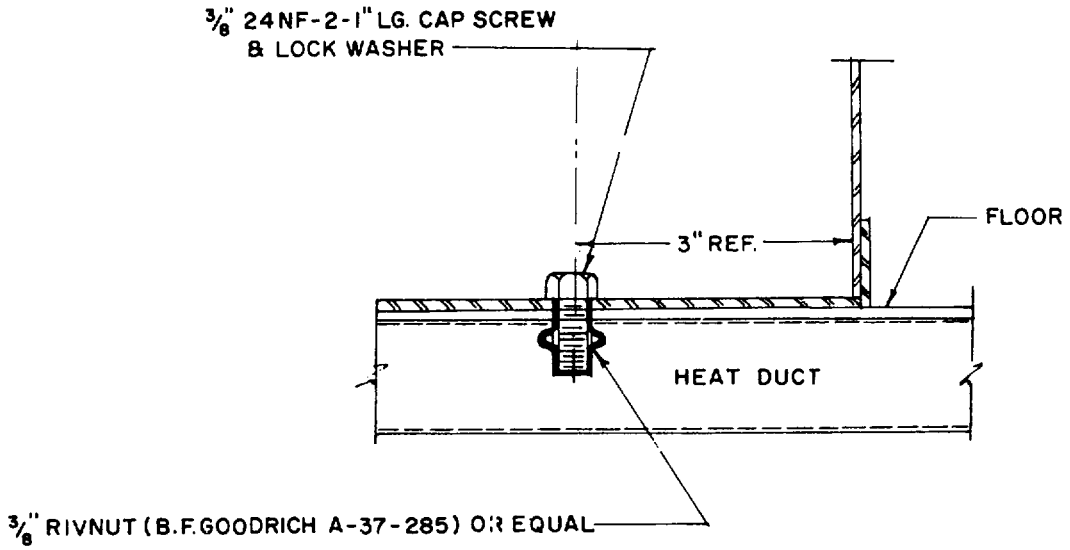


Figure 73. Storage mounting, floor.

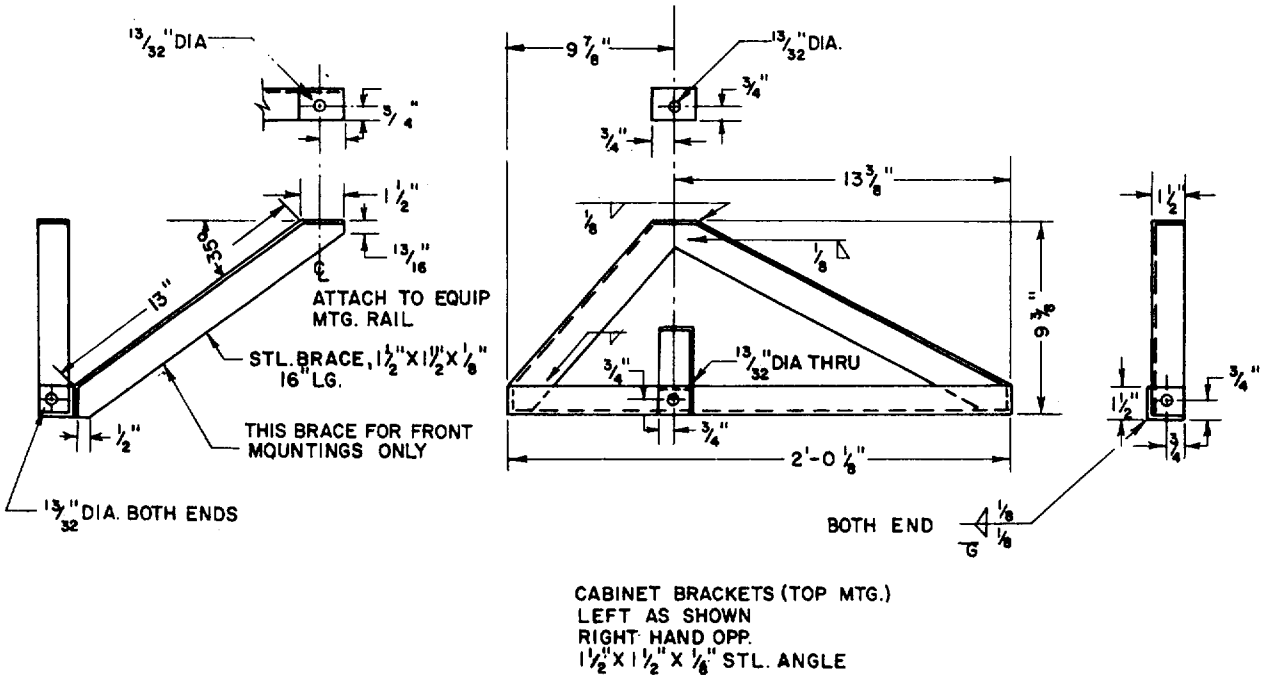


Figure 74. Cabinet brackets. top mounting.

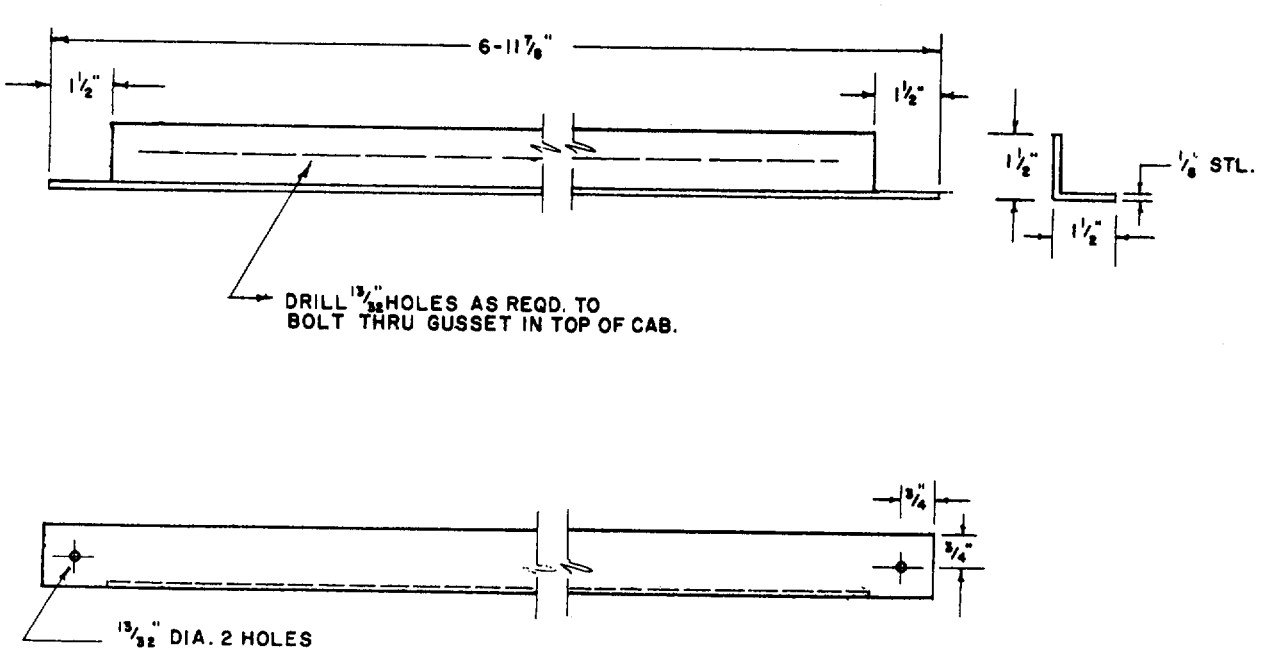


Figure 75. Cabinet brackets, front and rear.

Section II. CONTROLS AND INSTRUMENTS

131. General

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

132. Electric Controls and Instruments

Refer to paragraphs 8 and 9.

133. Pneumatic Controls and Instruments

Refer to paragraphs 8 and 10.

CHAPTER 9

MAINTENANCE INSTRUCTIONS (FIELD AND DEPOT MAINTENANCE)

Section I. SPECIAL FIELD AND DEPOT MAINTENANCE TOOLS AND EQUIPMENT

134. 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 manual for the item.

135. Replacement or Repair Parts

Replacement or repair parts required for field and depot maintenance of the shop set are listed in chapters 8 and 9.

Section II. LUBRICATION

136. General

Lubrication instructions for the shop set are contained in the lubrication order for the item of equipment and in paragraphs 29 and 80 and 85 and 86 of this manual.

137. Special Lubrication Instructions

Refer to paragraph 18 through 26 and 76 through 82 for special lubrication requirements under unusual conditions.

Section III. PREVENTIVE MAINTENANCE SERVICE

138. General

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

139. Preventive Maintenance Service at Time of Major Repair

When a shop set is returned to field or depot maintenance 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 the shop in the field.

140. Cabinets, Storage, Types I, II, and III

a. Repair. Fabrication and assembly of components which may be required for repair and replacement are shown in figures 76 through 96. 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.

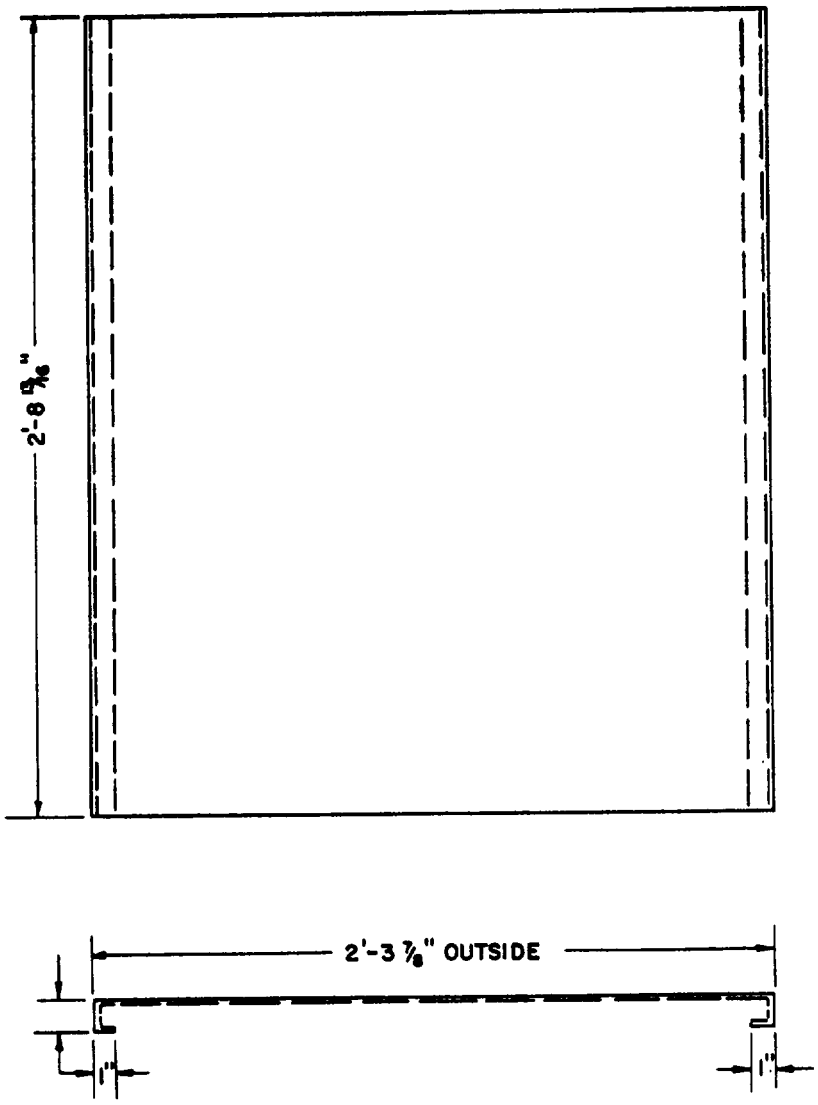


Figure 76. Typical cabinet side, type I.

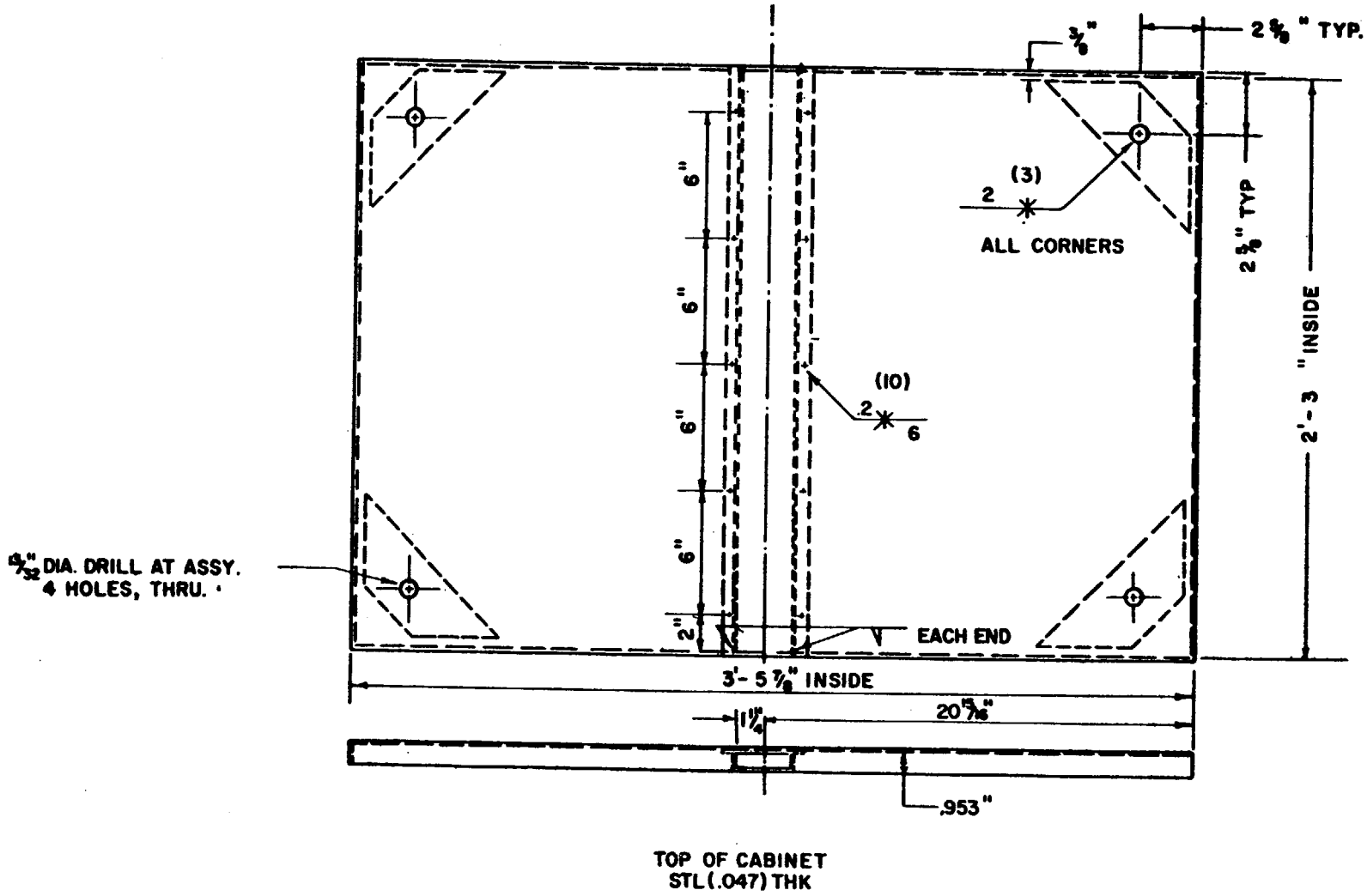


Figure 77. Typical cabinet top, type I.

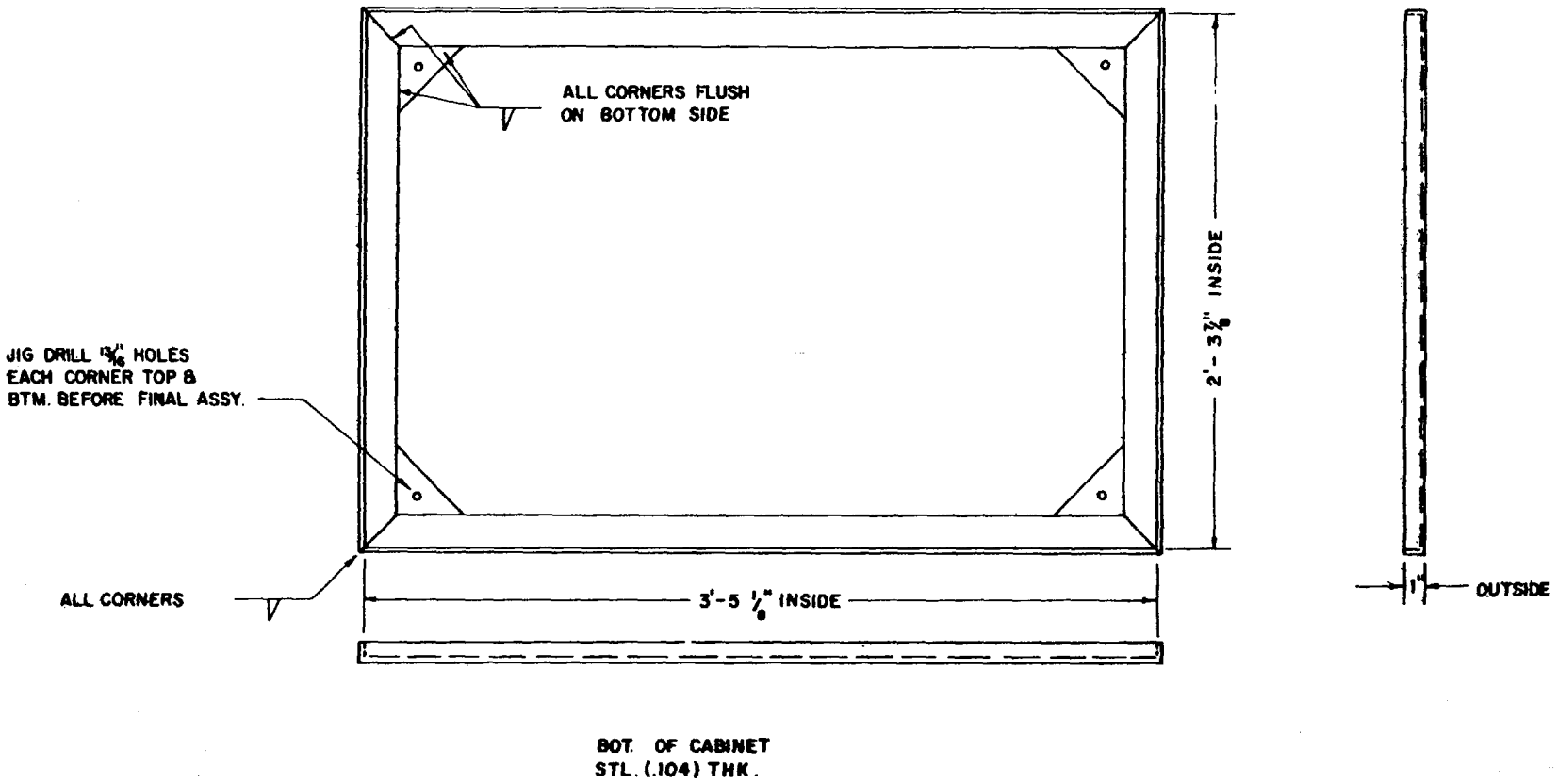


Figure 78. Typical cabinet bottom, type I.

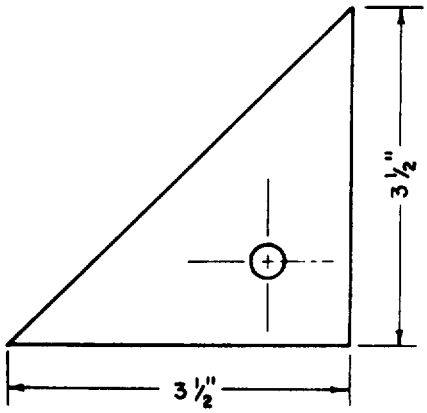
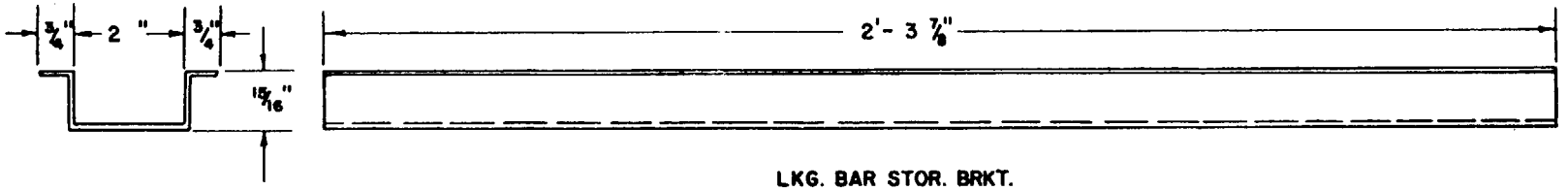
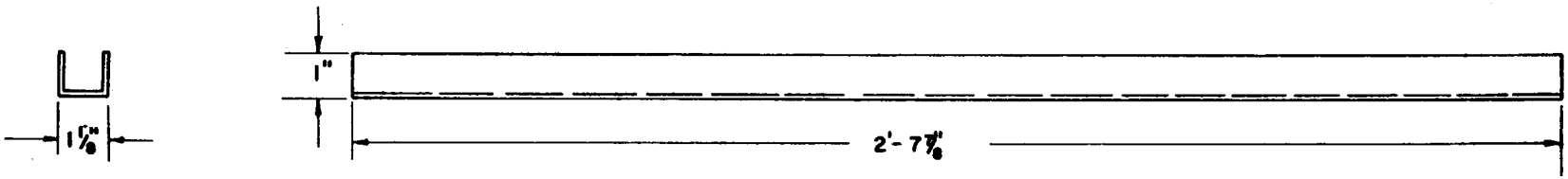


Figure 79. Typical cabinet bottom corner gusset, type I.



LKG. BAR STOR. BRKT.
STL.(.039) THK.

Figure 80. Typical locking bar storage bracket, , type I.



CENTER SPT.
STL. (.059) THK.

Figure 81. Typical cabinet center support, type I.

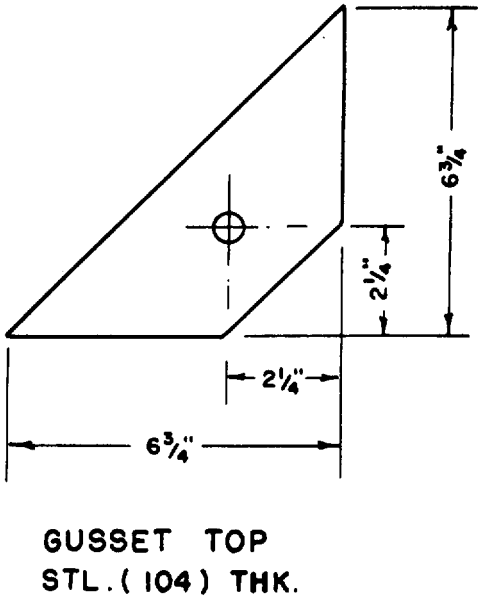
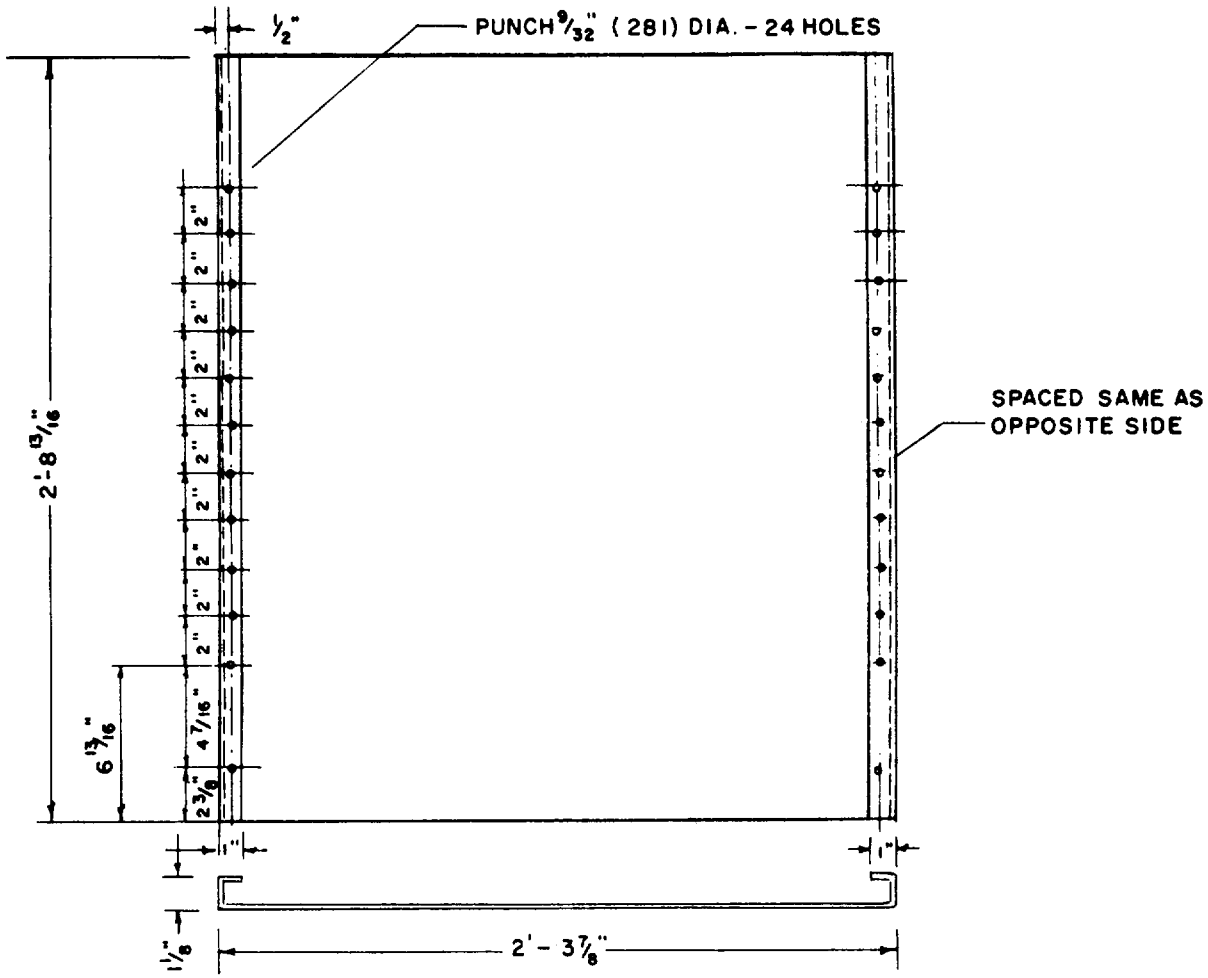
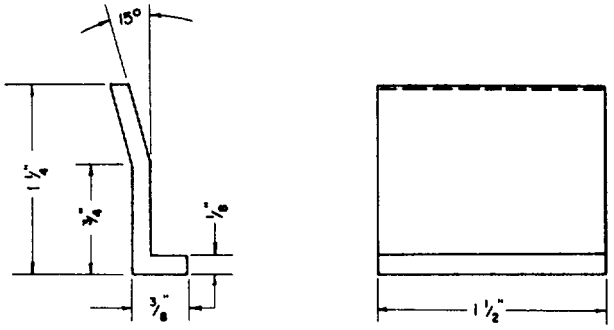


Figure 82. Typical cabinet top gusset, type I.



SIDE OF CABINET STL. (047) THK.

Figure 83. Typical cabinet side, type II.



GUARD SUPPORT STL.

Figure 84. Typical cabinet guard support, type II.

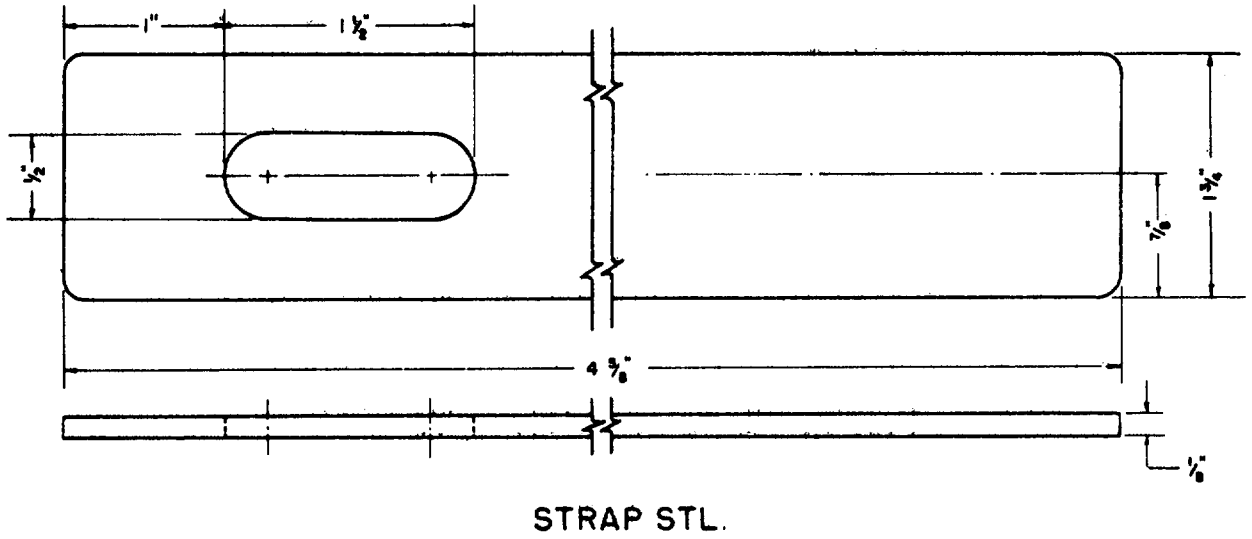


Figure 85. Typical cabinet steel strap, type II.

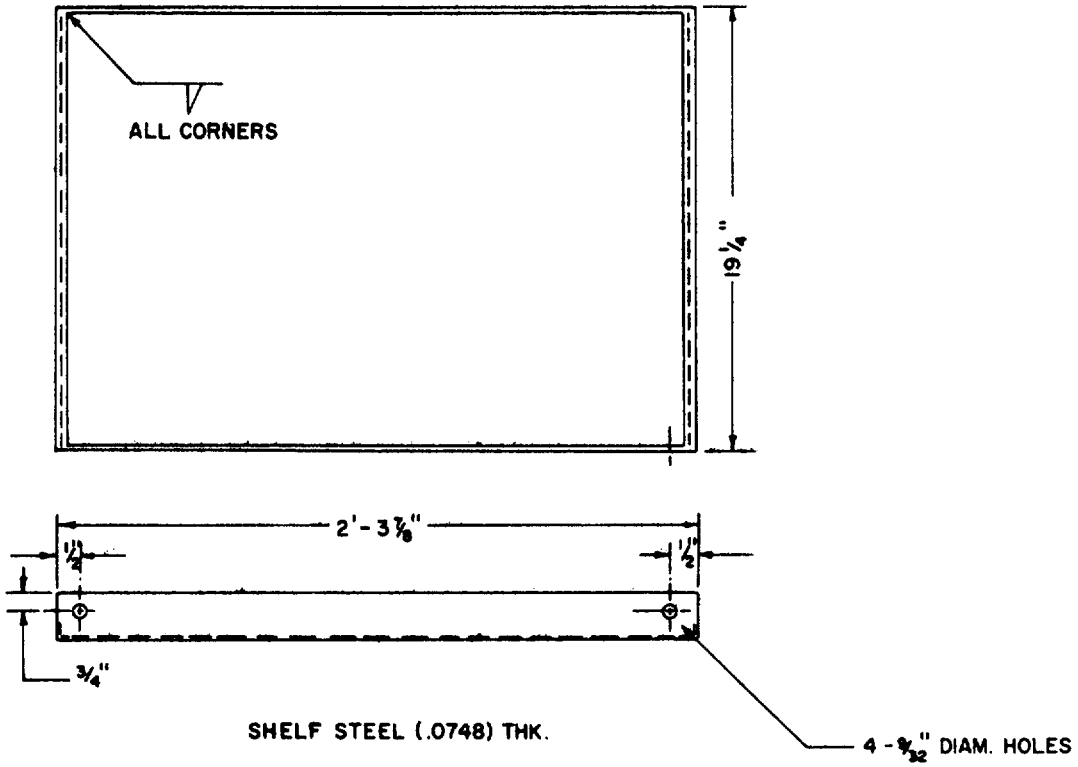


Figure 86. Typical cabinet, steel shelf, top view.

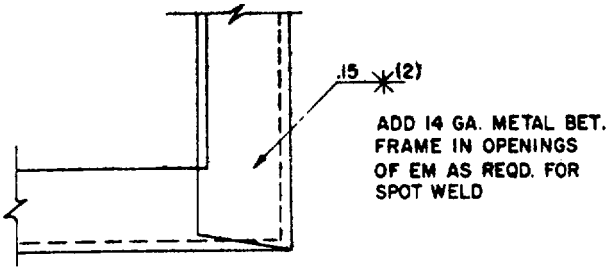


Figure 87. Typical cabinet steel shelf, corner.

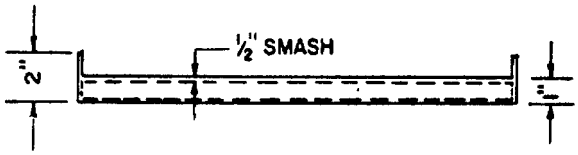
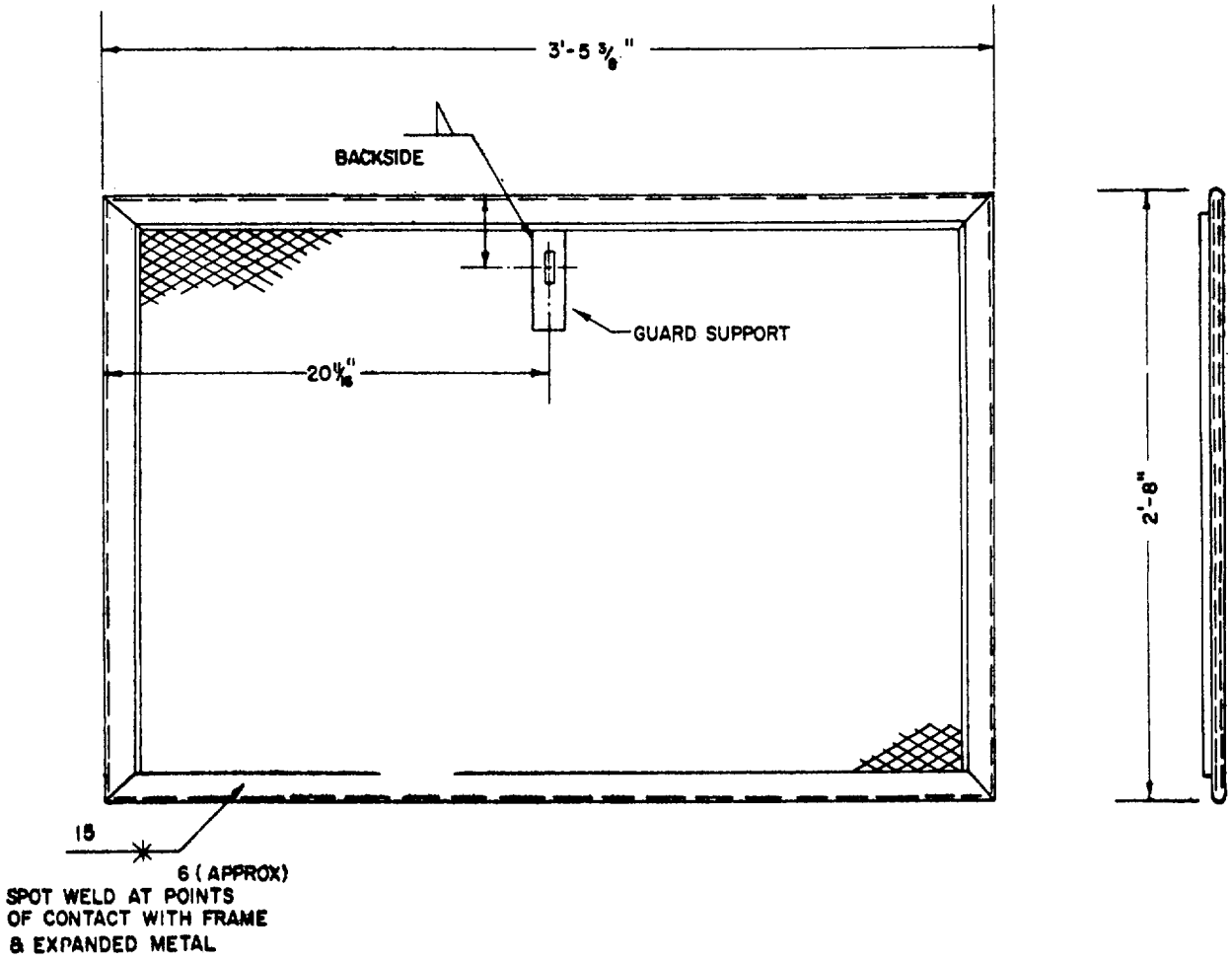


Figure 88. Typical cabinet steel shelf, end view.



GUARD OPEN BIN STOR.

Figure 89. Typical cabinet steel guard, type II.

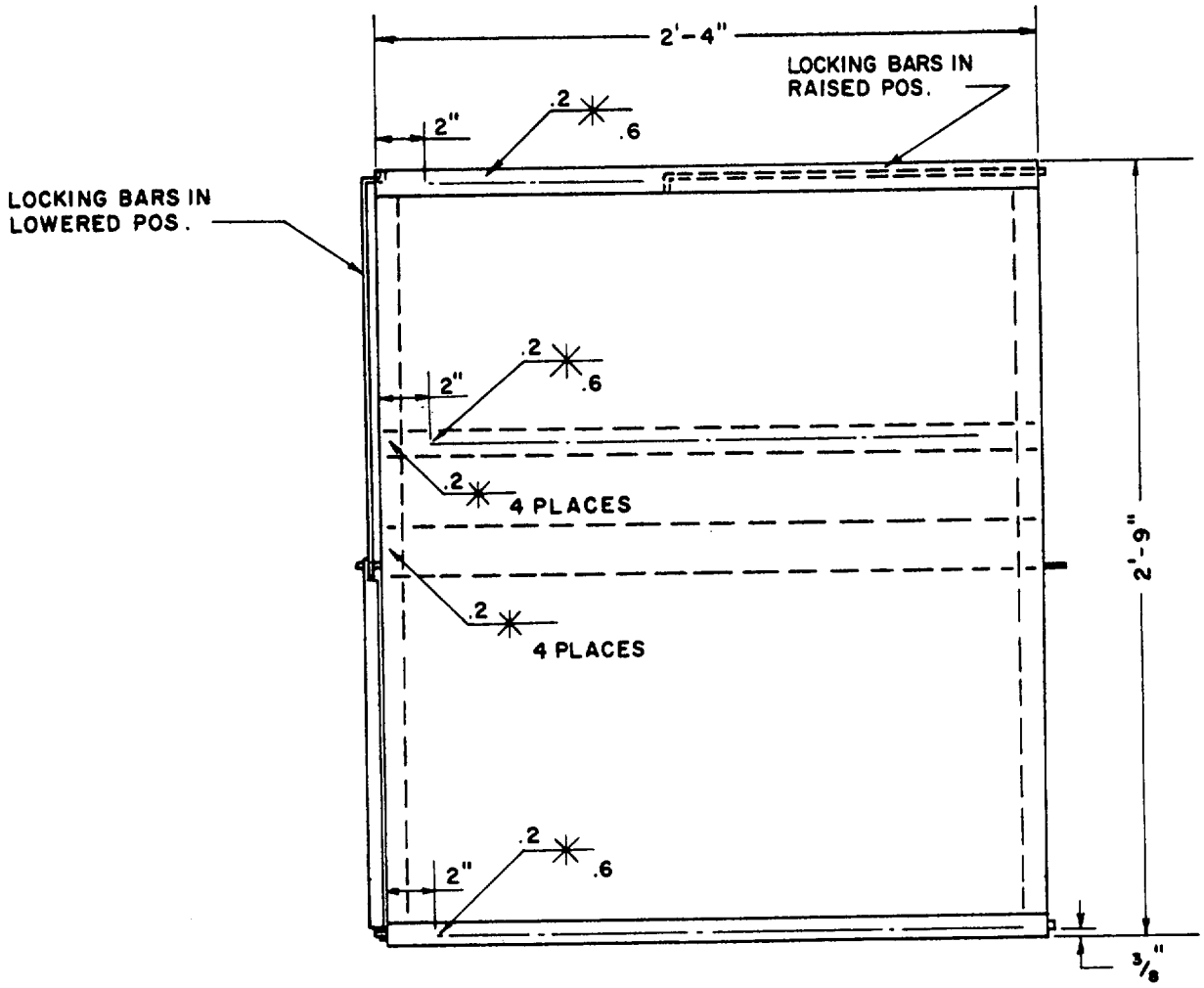


Figure 90. Typical cabinet side, type III

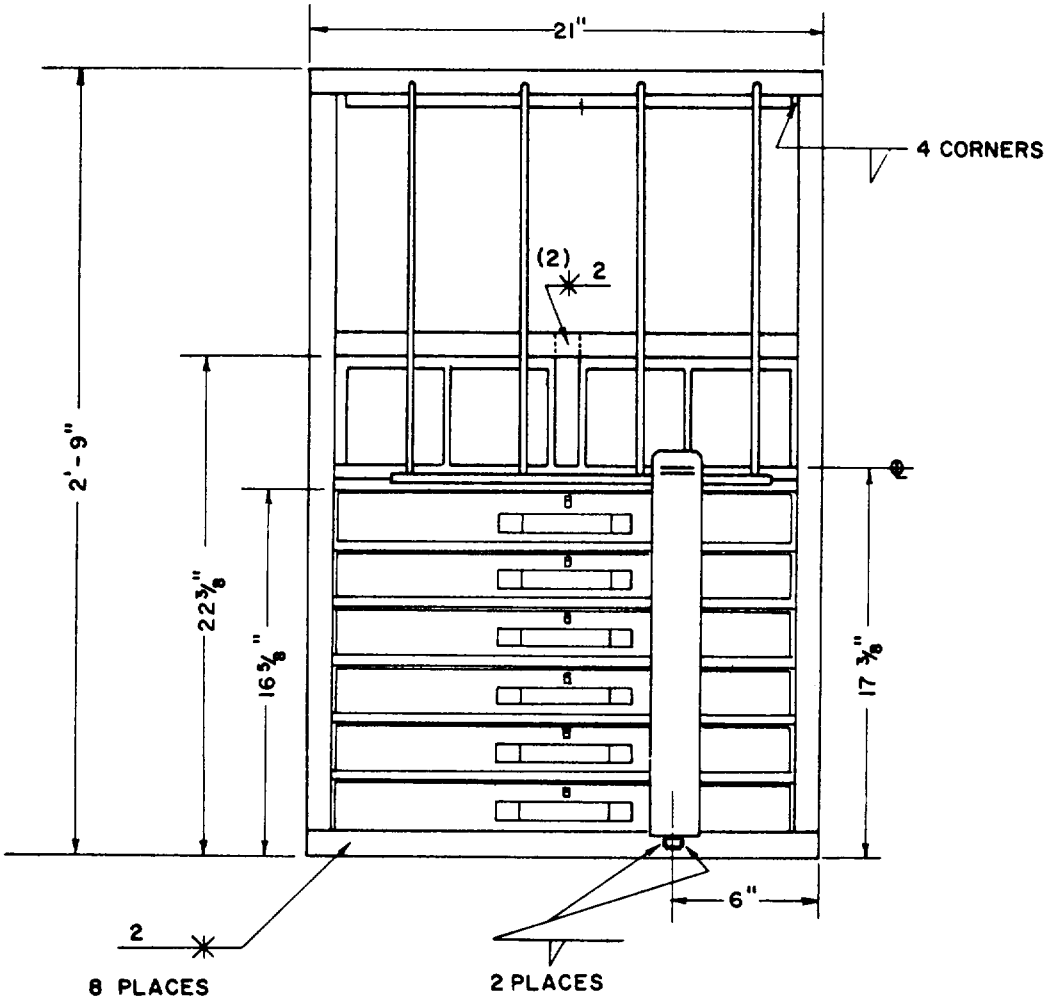


Figure 91. Front view, cabinet, type III.

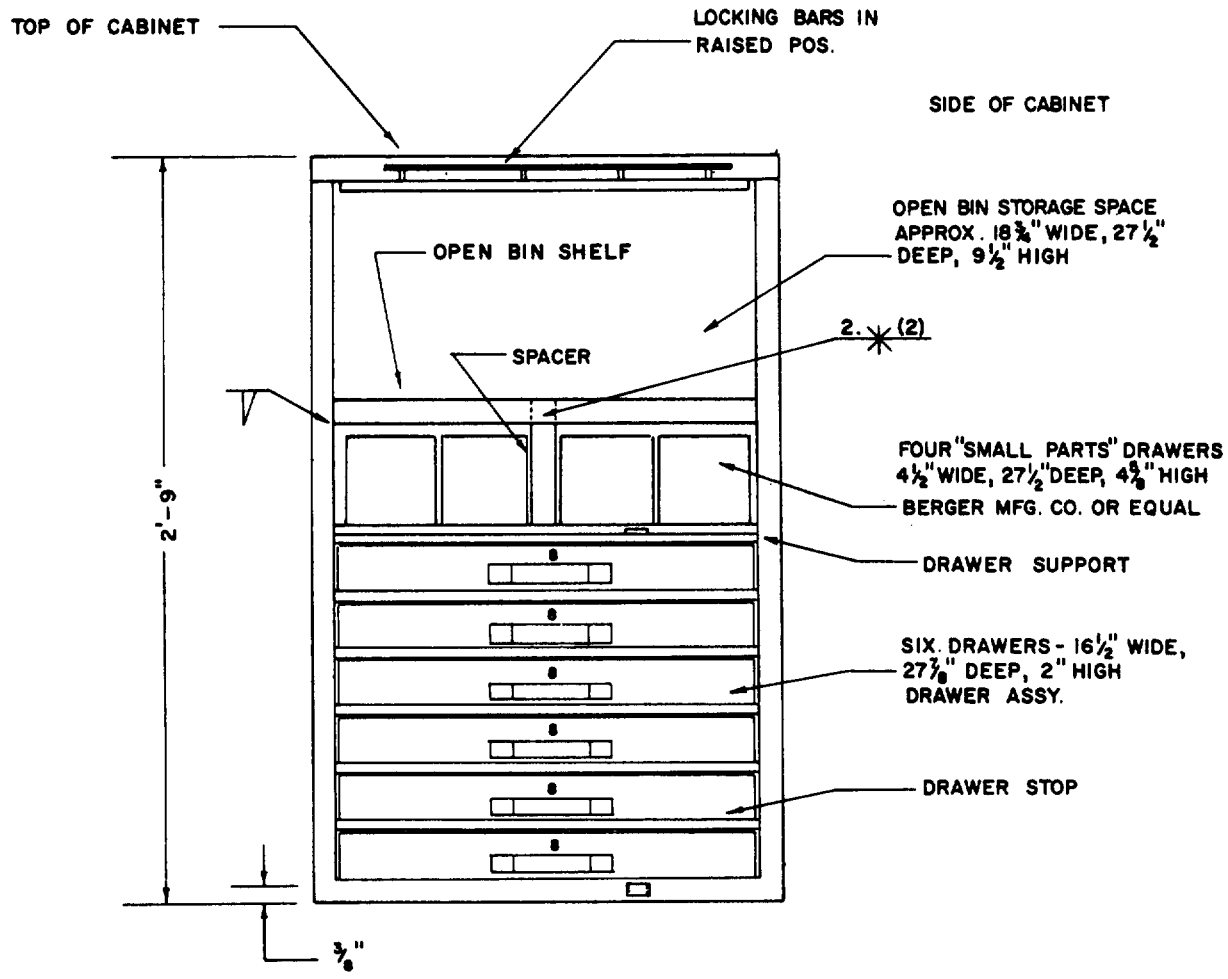
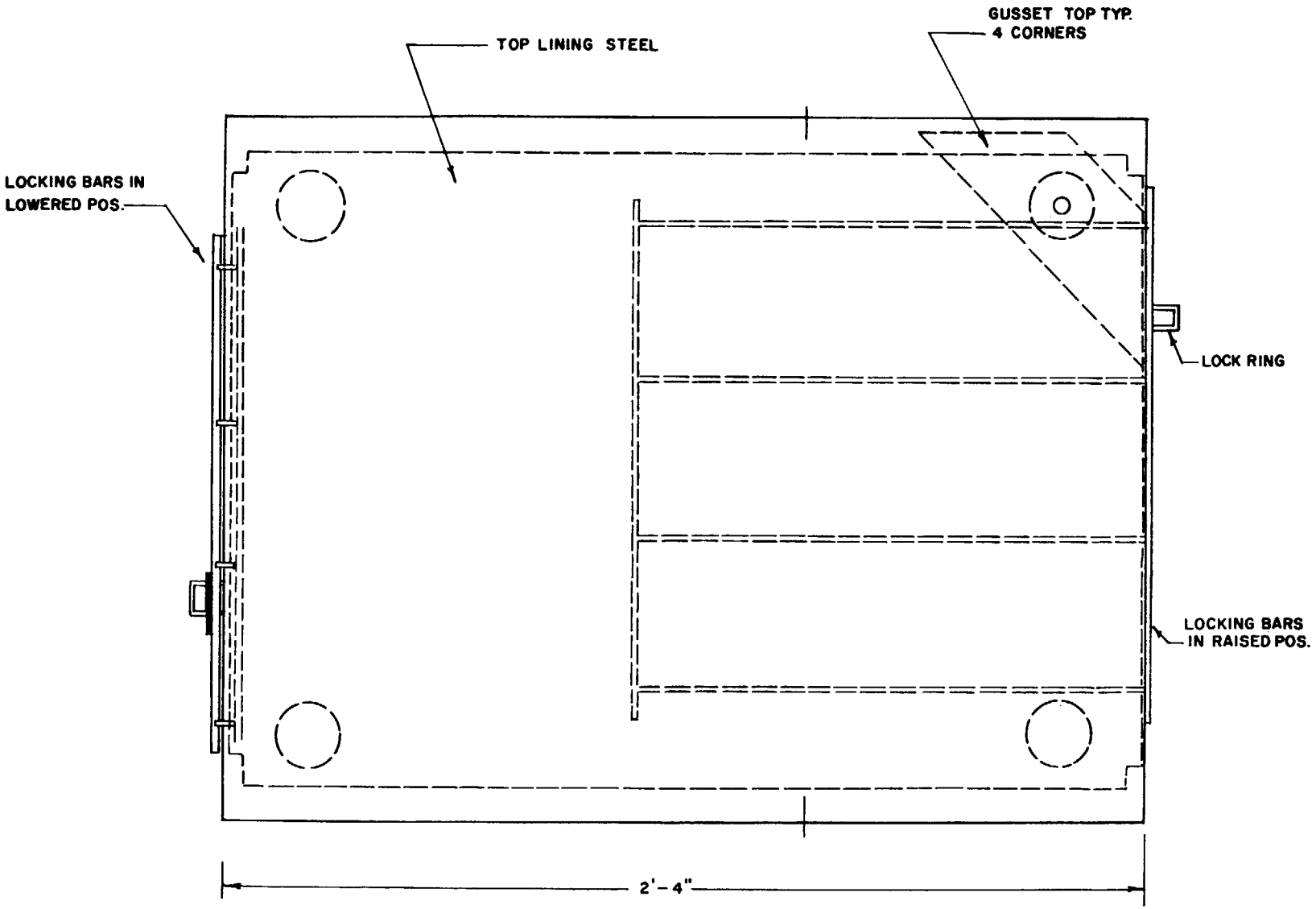


Figure 92. Rear view, cabinet, type III.


GUSSET TOP TYP.
4 CORNERS
TOP LINING STEEL
LOCKING BARS IN
LOWERED POS.
LOCK RING
LOCKING BARS
IN RAISED POS.
2'-4"

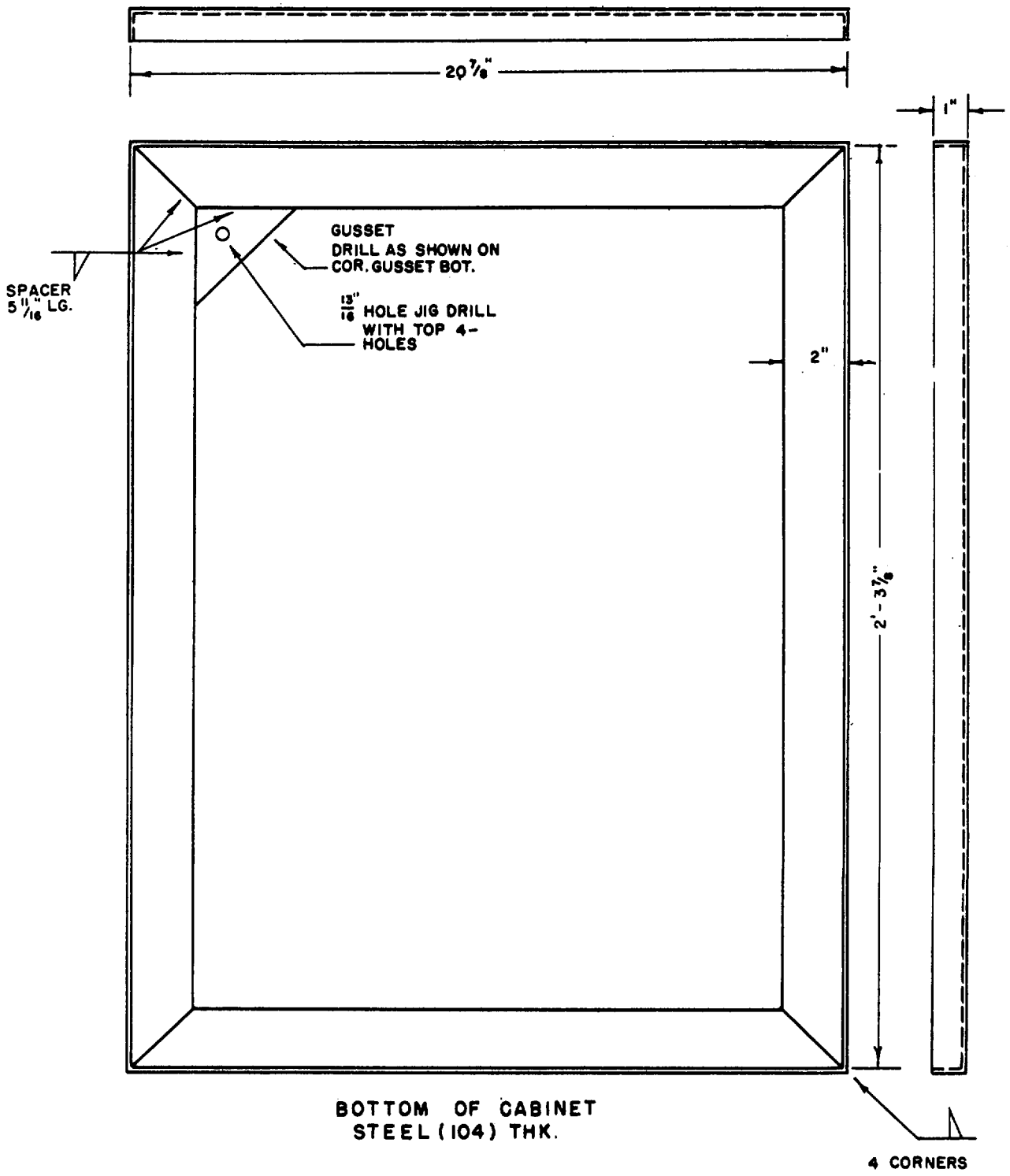


Figure 94. Bottom view, cabinet type III.

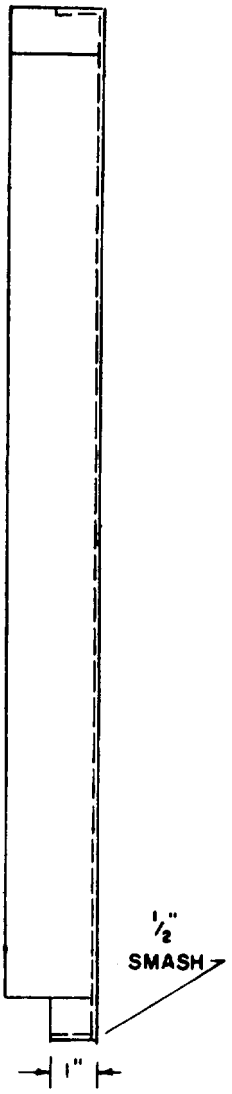


Figure 95. Open bin shelf, type III, front view.

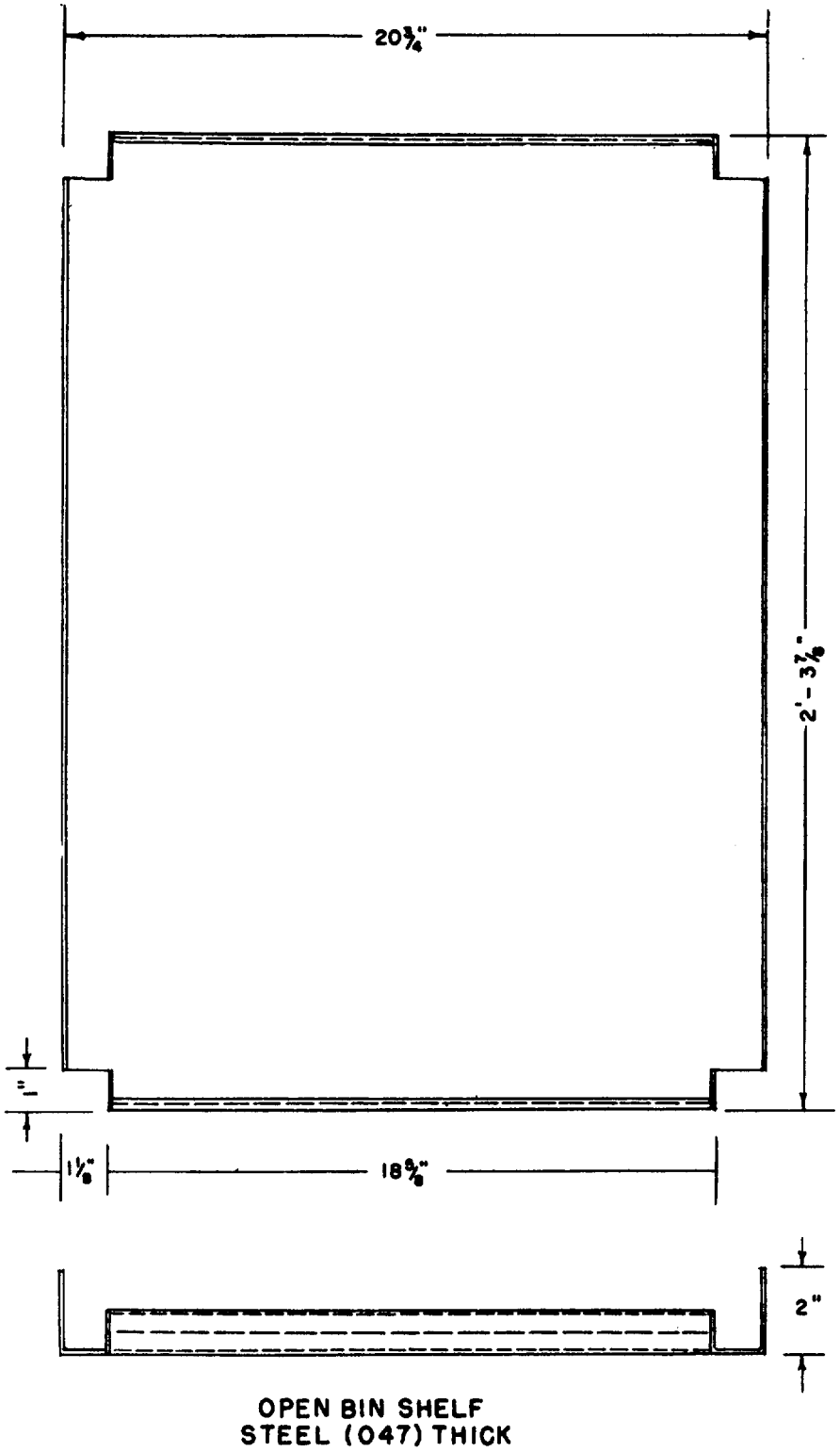


Figure 96. Open bin shelf, type III, top and side view.

141. Bench Top, Sizes A, B, C, and D

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

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

Section IV. TROUBLESHOOTING

142. 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.

143. 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.

144. 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. 8).

145. 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 breakers.

146. Electrical Equipment Will Not Start

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

147. 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.
Damaged air line	Replace air line.
Controls stuck	Repair or replace controls.

148. Pneumatic Equipment Stops During Operation

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

149. Pneumatic Equipment Will Not Start

Probable cause	*Possible remedy*
Power source not functioning correctly.	Refer to power source technical manual for procedure.
Check valves inoperative.	Repair or replace check valves.
Control stuck	Repair or replace controls.

150. Excessive Vibration of Equipment

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

151. Excessive Noise

Probable cause	*Possible Remedy*
Mounting not secure	Reposition and secure mounts.
Equipment assembled improperly	Re-assemble equipment correctly.

Section V. ELECTRICAL SYSTEM

152. General

Refer to paragraphs 101 through 105 for a detailed description of the electrical system.

153. 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 paragraphs 142 through 151 for procedures. Detailed description of electrical wiring system is listed in paragraphs 101 through 105 and figure 8.

154. Electrical Switches and Circuit Breakers

Refer to paragraphs 101 through 105 for description of circuit breakers and switches. Field and depot maintenance personnel's responsibilities consist of testing, or replacing switches and circuit breakers in accordance with appendix II. Refer to paragraphs 142 through 151 for procedures.

155. Lighting System

Refer to paragraphs 101 through 105 for a description of the lighting system. Field and depot maintenance personnel's responsibilities consist of testing, or replacing defective components of the lighting system in accordance with appendix II and TM 9-2330-23814.

156. Controls and Instruments

Field and depot maintenance of controls and instruments consist of mounting in accordance with paragraphs 128 through 133 and testing in accordance with the applicable technical manual.

Section VI. PNEUMATIC SYSTEM

157. General

Description of the pneumatic system is contained in paragraphs 106 through 110.

158. Air Compressor

Field and depot maintenance of the air compressor consists of mounting in accordance with technical manual for the compressor. Repair or replacement mounting parts are listed in chapter 8.

159. Air Supply Tank

Field and depot maintenance of the air supply tank consists of mounting in accordance with instructions in paragraphs 128 through 133 and testing in accordance with instructions in the technical manual for the compressor.

160. Lines and Hose

Field and depot maintenance of air lines and hose consists of mounting, testing, repair, and replacement. Refer to paragraphs 142 through 151 for troubleshooting procedures.

161. Controls and Instruments

Field and depot maintenance of controls and instruments consist of mounting in accordance with paragraphs 128 through 133 and testing in accordance with the applicable technical manual.

Section VII. UTILITY SYSTEM

162. General

Field and depot maintenance responsibilities for the utility system are listed in paragraphs 138 through 151.

163. Parts

Repair or replacement parts for the utility system are listed in figures 74 through 96.

APPENDIX I

REFERENCES

1. Publication Indexes

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

2. Technical Manuals (Applicable to Van M447)

TM 9-2330-238-14	Operators, organizational and field maintenance manual: Chassis, semi-trailer: 6-ton, 4-wheel, M295A1 (2330-649-8124) and semi-trailer, van: shop, folding sides, 6-ton, 4-wheel, M447 (2330-542-5709).

3. 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-385-1 Series	Army safety policy.

4. Supply Manuals

SM 55-4-4920-S42 Shop Set, Aircraft Maintenance, Semitrailer Mounted, C-8, Instrument Shop (FSN 4290-621-2046).

5. 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. Definition of Terms

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

b. Adjust. To regulate periodically to prevent malfunctions.

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 unserviceable 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

Group	Components and related operations	1st ech.	2d ech.	3d ech.	4th ech .	5th ech.	tools req'd	Remarks
	ELECTRICAL							
	CIRCUIT BREAKERS:							
	Service	X						
	Adjust	X						
	Inspect	X						
	Test		X					
	Replace			X*				
	Repair				X			
	Rebuild					X		
	WIRING:							
	Service	X						*Only those items requiring minor disassembly.
	Test		X					
	Inspect	X						
	Replace			X*				
	Repair			X				
	Rebuild					X		

Maintenance Allocation Chart-Continued.

Group	Components and related operations	1st ech.	2d ech.	3d ech.	4th ech .	5th ech.	tools req'd	Remarks
	PNEUMATIC							
	AIR SUPPLY SYSTEM:							
	Service	X						
	Adjust	X						
	Inspect	X						
	Test		X					
	Replace			X*				
	Repair				X			
	Rebuild					X		
	UTILITY							
	CABINETS:							
	Service	X						
	Adjust	X						
	Inspect	X						
	Replace		X					
	Repair			X*				
	Rebuild					X		

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