D E P A R T M E N T O F T H E A R M Y T E C H N I C A L M A N U A L

OPERATOR, ORGANIZATIONAL, FIELD

AND DEPOT MAINTENANCE MANUAL

SHOP SET AIRCRAFT MAINTENANCE

SEMITRAILER MOUNTED SET C-3,

FLAW DETECTION

This copy is a reprint which includes current pages from Changes 1 and 2

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

S E P T E M B E R 1 9 6 1

Change No. 2

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 3 July 1989

OPERATOR, ORGANIZATIONAL, FIELD AND DEPOT MAINTENANCE MANUAL

SHOP SET, AIRCRAFT MAINTENANCE, SEMITRAILER

MOUNTED, SET C-3, FLAW DETECTION

TM 55-4920-212-15, September 1961, is changed as follows.

Page 1. This paragraph will be added under MOUNTED, SET C-3, FLAW DETECTION

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes, or if you know of a way to improve the procedures, please let us know. Mail your letter DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, U.S. Army Aviation Systems Command, ATTN: AMSAV-MMD, 4300 Goodfellow Blvd, St. Louis, MO. 63120-1798. A reply will be furnished to you.

Page 4, b. Change from DA PAM-310-2 to DA PAM 25-30.

Page 4, paragraph 3.e. is added after 3.d.

3.e. Preparation for Storage or Shipment. For general technical information on preparation for storage and shipment refer to TM 55-1500-204-25/1 and TM 743-200-1. For regulatory requirements pertaining to equipment placed in administrative storage refer to AR 750-1.

Page 5, para 4.c. is superseded as follows: 4.c. List of Components. A list of the components is contained in SC 4920-99-CL-A37.

Page 5, para 4.d. line 4. SM 55-4-4920-S37 is changed to read SC 4920-99-CL-A37.

Page 56, para 149j. Is rescinded.

Page 71, Figure 57. Is rescinded.

Page 87- APPENDIX I This page is rescinded. Add the following page for page 87.

Add DA Form 2028-2 in back of manual.

By Order of the Secretary of the Army:

CARL E. VUONO
General, United States Army
Chief of Staff

Official:

WILLIAM J. MEEHAN II
Brigadier General, United States Army
The Adjutant General

DISTRIBUTION:
To be distributed in accordance with DA Form 12-31, -10 and CL, AVUM and AVIM Maintenance requirements for All Fixed and Rotary Wing Aircraft.

CHANGE
No. 1

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

Operator, Organizational, Field
and Depot Maintenance Manual

SHOP SET AIRCRAFT MAINTENANCE SEMITRAILER
MOUNTED SET C-3, FLAW DETECTION

TM 55-4920-212-15, 19 September 1961, is changed as follows:

Page 37. Paragraphs 63 and 64 are superseded as follows:

63. Purpose

This chapter furnishes the operator with sufficient information for preparation of the equipment comprising Shop Set, Aircraft Maintenance, Semitrailer Mounted, C-3, Flaw Detection, for shipment and limited storage.

64. 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 for shipment and limited storage.

Page 38. Add the following after title of Section III:

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

Page 38. Paragraphs 67 through 70 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. 55-4920-212-15

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D.C., *19 September 1961*

OPERATOR, ORGANIZATIONAL, FIELD AND DEPOT MAINTENANCE MANUAL

SHOP SET, AIRCRAFT MAINTENANCE, SEMITRAILER

MOUNTED, SET C3, FLAW DETECTION

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CHAPTER 1

INTRODUCTION

Section I. GENERAL

1. Scope

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

2. References

a. Current Technical References. Appendix I lists the technical manuals, lubrication orders, and other technical publications applicable to the equipment.

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 maintenance allocation chart (app. II), for the purpose of cleaning, lubricating, or replacing repair parts. In all cases where the nature of the repair, modification, or adjustment is beyond the scope or facilities of the using organization, the applicable supporting maintenance unit should be informed so that trained personnel with suitable tools and equipment may be provided or other instructions issued.

(2) *Field and depot maintenance allocation*. The publication herein of instructions for complete disassembly and repair is not to be construed as authority for the performance by field maintenance units of those functions which are the responsibilities of depots. The prescribed maintenance responsibilities will apply as reflected in the allocation of maintenance parts in the applicable manual for the item of equipment. Provisioning of parts listed in chapters 8 and 9 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, to be repaired, or to be 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 shop; 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. No forms other than those approved for the Department of the Army will be used. For a list 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, 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-3, Flaw Detection 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 a flaw detection facility. The shop set contains four systems; electrical,. pneumatic, water, and utility.

(1) *Electrical system*. Electric current is supplied to the shop from an auxiliary source by means of a power cable inserted in the external power receptacle of the shop. The external power receptacle feeds directly to the safety disconnect switch which is provided to enable the operator to disconnect the power source from the interior of the shop. An electric panel (fig. 4), is mounted directly above the safety disconnect switch. The control panel contains 14 thermal-magnetic circuit breakers which serve as distribution centers for the current supplied to the equipment of the shop (fig. 7). Overhead ceiling receptacles are provided to furnish current for small, electrically operated tools. Heavier equipment such as the air compressor, bench grinder, lights, and heaters, are connected directly to the electric control panel.

(2) *Pneumatic system*. The air compressor (fig. 9), is electrically driven with a 5 CFM capacity at 175 psi. The compressor and air storage tank are mounted separately (figs. 8, 17, and 18). Air lines are installed (figs. 10, 11, and 13), 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, two regulators for maintaining a steady operating pressure, two operating pressure gages, check units, and valves to control or disconnect the air pressure. An auxiliary air supply connection (fig. 12), 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 the other shops when the compressor is operating.

(3) *Water system*. The water system is designed for storing and transporting liquids without spilling; a cover,

seal and-.baffles are installed to accomplish this operation. The system (figs. 20, 21, and 22), is composed of a water tank, tank cover, tank seal, washer, water gages, valves, pump, strainer, tubing, hose, plumbing fittings, and the necessary mounting equipment. The tank has a capacity of 85 gallons and may be filled from an outside source by use of the pump. The pump is also used to transfer water from the tank to the washer or to fill the washer from an outside source. A 25-foot fire hose is supplied for draining the water system.

(4) *Utility system*. The utility system consists of one each, type V storage cabinet. The cabinet is equipped with 11 drawers for storing liquids and chemicals for use with the flaw detection equipment Overall size of the cabinet is 32 5/8 inches high by 28 inches wide by 27 inches deep.

b. *Identification*. Identification and instruction markings are listed in figures 1 through 3.

c. *List of Components*. A list of the components is contained in SM 55-4-4920-S37.

d. *Deviation in Models*. This manual applies only to Shop Set, Aircraft Maintenance, Semitrailer Mounted, C-3, Flaw Detection, as defined in SM 5564920-S37.

5. Tabulated data

a. Organizational Maintenance Data.

Model C-3
Overall dimensions:
Overall length ..... 319 in.
Overall width ..... 96 in.
Overall height (loaded) ..... 132 in.
Height of chassis..... 40 1/2 in.
Overall width with sides folded out ..... 166 1/2 in.
Volume ..... 2,288 cubic ft.
Total weight ..... 18,585 lb.

b. Field and Depot Maintenance Data.

(1) Electrical system.

Power source.....Auxiliary; generator or domestic.
Power requirement .....Three-phase, 60-cycle 208 v , ac, and 120-240 v, single-phase, 60-cycle.
Electrical connections shop ..... Power cable, male to female joy plug.
Safety devices .....Safety disconnect switch.
Controls .....Thermal-magnetic circuit breaker panel; 14 breakers (fig. 4).
Electrical connections equipment .....Receptacles and circuit breakers.

(2) *Pneumatic system*.

Power source .....Air compressor, reciprocating, electric motor driven.
Compressor make and model.....Military Specification MILC-13874, Class A, Style I.
Compressor mounting.....Bolt down.
Compressor rating .....CFM @ 175 psi.
Power supply required .....220 v, three-phase, 60-cycle.
Pneumatic connections, shop.....Quick disconnect, air supply tank.
Safety devices .....Safety relief valve, refer to technical manual for the compressor (app. I).
Controls .....Shutoff valve; oil and water separator, gages, regulators, valves, and check units (fig. 5).
Pneumatic connections equipment .....Quick disconnect fittings (fig. 5).

(3) *Water system*.

Power source .....Pump, shallow well type, electric motor driven.
Pump make and model .....Arora No. BSFT-G or equivalent.
Power supply required (pump)...110-120 v, ac, 60-cycle, single phase.
Pump mounting.....Bolt down (fig. 20)
Water system connections -.....Hose fittings.
Safety devices .....Relief valves, shutoff valves, drain cocks, and gages.

Water system capacity ..... 85 gallons, liquid.
Controls ..... Valves, drains, and strainers.
Instruments ..... Gages.

(4) Utility system.

Type equipment ..... Storage cabinet type V, GFE.
Equipment function ..... Storage of liquids and small tools.
Equipment mounting ..... Bolt down.

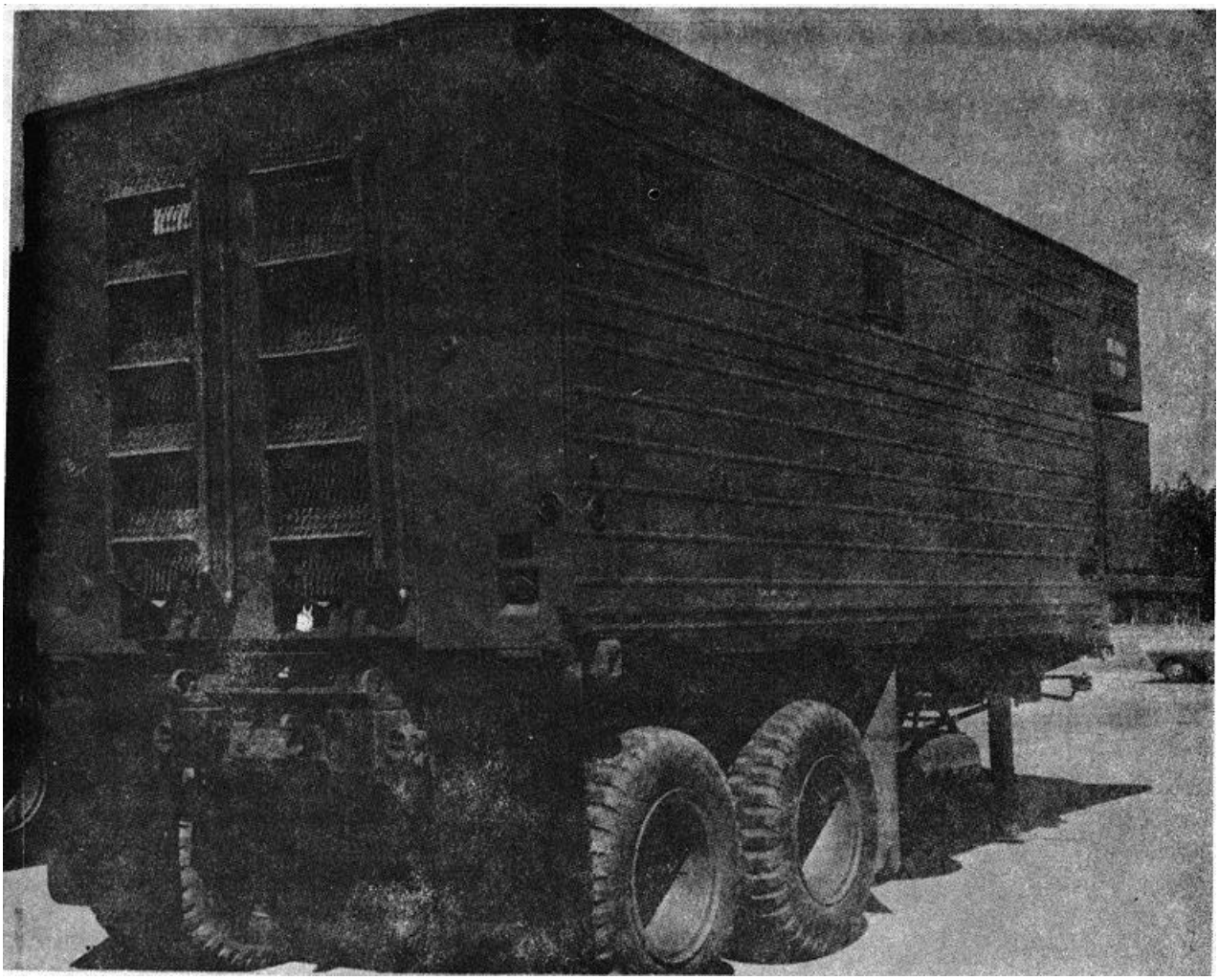


Figure 1. Shop Set C-3, Flaw Detection.

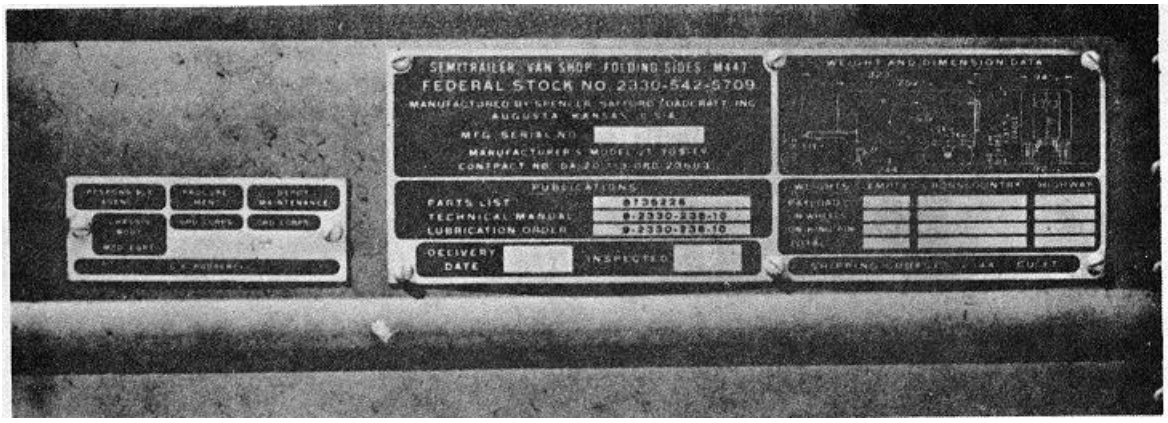


Figure 2. Identification plates, Shop Set, C-3.

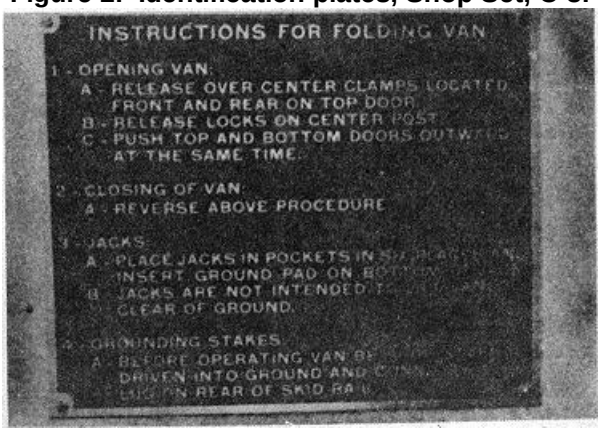


Figure 3. Instruction plate, Shop Set, C-3.

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 assembly, location, and mounting details of equipment. Make a record of any malfunctions. Notify the responsible maintenance echelon of deficiencies for correction as quickly as possible.

7. Before Operation Service

a. Lubrication. Lubricate equipment in accordance with paragraphs 30 and 31.

b. Fueling Instructions. Service equipment with fuel specified in operational and maintenance manuals of the specific item.

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

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 of which the equipment is capable of performing.

9. Electric Controls and Instruments

An electric control panel is located at the right rear corner of the interior of the shop. This panel is equipped with circuit breakers and an identification list (fig. 4); additional circuits may be installed, when necessary, in the panel. A safety switch is mounted beneath the panel on the incoming line. A layout (wiring diagram) of the control panel is shown in figure 7. An outside power receptacle is mounted on the right rear of the shop exterior.

Caution
Do not modify power receptacle or electrical cable.

10. Pneumatic Controls and Instruments

Pneumatic controls and instruments are mounted as a part of the airlines installation as illustrated in figure 5. These controls and instruments include valves, regulators, separators, gages, and check units. The air line is installed starting at the left front of the bottom of the shop, passing through the floor to the regulators and separators. The air line is divided into two sections after passing the separators, with one section continuing down each side of the shop, along the ceiling. Two check unit couplings are mounted on each side and another one on the outside front at the bottom of the incoming line.

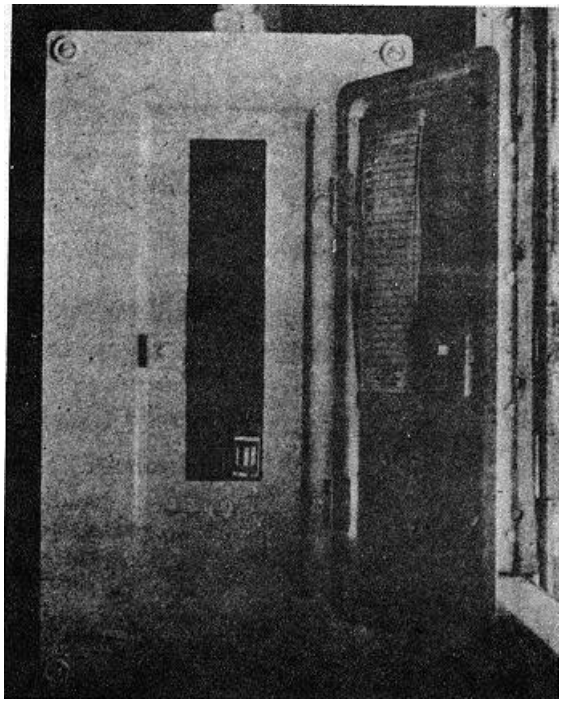


Figure 4. Electrical control panel and identification list.

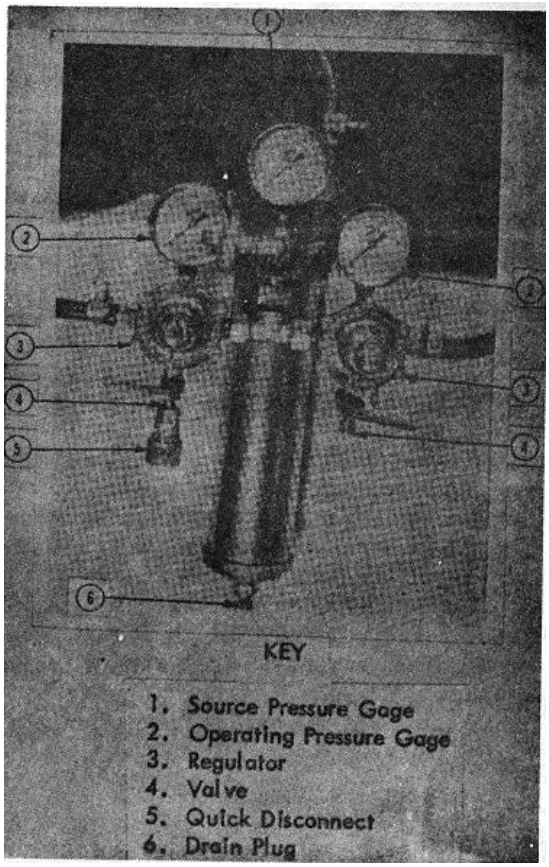


Figure 5. Pneumatic controls and instruments.

11. Water System Controls and Instruments

The water system controls and instruments are mounted with the water lines (fig. 20). Controls and instruments for the water system include valves, drains, strainer, pump, and gages. The controls are used to regulate the flow of liquid from an outside source to the tank; from the tank to the washer; and from' an outside source to the washer. Instruments are arranged so that the operator may see the water level in the tank or washer and determine whether or not the correct water pressure is being supplied to the system.

Section III. OPERATION UNDER USUAL CONDITIONS

12. General

Instructions in this section are published for the use 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.

13. Preparation for Starting

a. Perform the before-operation daily service (par. 32).

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

c. Start power supply equipment.

Note

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

Warning

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

d. The equipment comprising Shop Set, Aircraft Maintenance, Semitrailer Mounted, C-8, Flaw Detection, (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.

14. Shutdown of Shop Set

a. Shutdown instructions for the units comprising Shop Set, Aircraft Maintenance, Semitrailer Mounted, C-3, Flaw Detection (par 4), 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 (par. 32).

15. 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.

(8) Plug cords of equipment to be operated into receptacles 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 pneumatic equipment hose into receptacles provided.

Note

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

d. Water System.

(1) Check the valves, gages, drain, and pump for proper setting before starting equipment.

(2) To operate system from auxiliary source, under pressure, close valves 1, 2, 4, 5, and 6 (fig. 20); open valve 8 (fig. 20); place water pump switch in OFF position.

(3) To operate system from auxiliary source, without pressure, close valves 1, 2, 4, 5, and 6 (fig. 20); open valve 8 (fig. 20); place pump switch in ON position.

(4) To fill storage tank from outside source, close valves 2, 5, and 6 (fig. 20); open valves 1, 8, and 4, (fig. 20); place water pump switch in ON position.

(5) To operate system from storage tank, close valves 1, 8, 5, and 6 (fig. 20); open valves 2 and 4 (fig. 20); place water pump switch in ON position.

(6) To drain system, open all valves; place water pump switch in OFF position.

16. Movement of Equipment

a. Perform "at-halt" and "after-operation" daily service (table I).

b. Install security locking bars on cabinets with drawers.

c. Store all tools and equipment.

d. Secure tools or equipment too large for bin storage, in space provided (fig. 6).

e. Store cable or hose in locations provided.

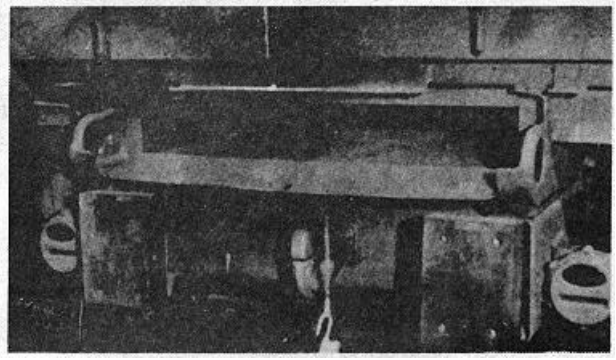


Figure 6. Jack stowage box.

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

17. Maintenance and Operating Instructions

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

18. Auxiliary Connections

Connections are provided for auxiliary pneumatic, electrical, and water operation. The location, purpose, and description of these auxiliary outlets are described in paragraphs 84 through 86. Operating instructions for the auxiliary connections are contained in this chapter.

Section V. OPERATION UNDER UNUSUAL CONDITIONS

19. 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 fuel 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.

20. Extreme-Cold Weather Conditions

a. General.

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

(2) The cooling systems must be

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

Caution

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

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

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

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

21. Extreme-Cold Weather Operations

a. General.

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

(2) The operator must exercise caution when placing the equipment in operation after a shutdown. Thickened lubricants may cause failure of parts. Warm up motorized equipment thoroughly before operating, check source voltage of electrical equipment to ascertain that sufficient power is available to prevent motor burnouts.

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

b. At Stop.

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

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

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

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

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

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

(7) Open drain cocks to remove liquid from water separators and cooling systems, and 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.

22. Operation in Extreme-Hot Weather Conditions

a. General. Operation of the equipment in extreme hot-weather conditions requires efficient cooling and proper lubrication. Halt the equipment for a cooling off period whenever necessary and conditions permit. Frequently inspect and service cooling units, oil filters, and air cleaners. Check ventilators periodically for cracks and obstructions. 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. Protect cooling systems with rust inhibiter compound. Remove the batteries and store in a cool place.

23. 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.

24. Operation In Snow and Ice

The precautions listed in paragraphs 20 and 21, apply to operating the equipment in snow and ice.

25. 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 76 percent lubricating oil and 24 percent corrosion preventive compound, Military Specification MILC-6529, Type I, to all surfaces not protected by paint.

Caution

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

Operating equipment, including hand tools, may be protected by application to exterior surfaces of corrosion preventive compound, Military Specification MILC-16178, Grade I.

26. 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.

27. Operation at High Altitudes

Overheating of equipment and deviation in instrument readings constitute the major problems of operating the 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

28. Special Tools and 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 item.

29. On-Vehicle Material IOVM)

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

Section II. LUBRICATION

30. 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.

31. 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 from dirt. Lubrication instructions for the protection of equipment under unusual conditions contained in paragraphs 19 through 27.

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

c. 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

32. 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 equipments 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 repeating parts of the before operation service. It is the basic daily service for equipment and consists of correcting so far 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 a check by hand or wrench for looseness. Such an examination must include any brackets, lockwashers, locknuts, locking wires, or cotter pins used.

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

33. Specific Procedures for Operators

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

34. Cleaning

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

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

b. A solution of one part grease-cleaning compound to four parts of 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 handtools, exclusive of optical instruments, may be wiped with a light lubricating oil.

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

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

35. 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 tarts as they will deteriorate the rubber.

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

Section IV. TROUBLESHOOTING

36. 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.

37. Procedure

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

38. Electrical Equipment Operates at Slow or Reduced Speed

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

39. Electrical Equipment Stops During Operation

Probable cause	*Possible remedy*
Power cord of equipment not properly plugged into receptacle	Remove plug from receptacle and reinsert fully into receptacle.
Equipment overheated	Reduce operating speed; allow equipment to cool and restart.
Circuit breaker tripped to OFF position	Reset circuit breaker to ON position; restart equipment.
Cause beyond maintenance scope of operator	Notify second maintenance echelon.

40. Electric Equipment Will Not Start

Probable cause	*Possible remedy*
Power cord of equipment not plugged into receptacle	Insert plug of equipment cord into receptacle.
Circuit breakers in electrical panel in OFF position	Reset circuit breakers to ON position.
Safety disconnect switch open	Close safety disconnect switch.
Cause beyond maintenance scope of operator	Notify second maintenance echelon.

41. 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; restart equipment.
Air pressure not properly regulated at separator	Adjust pressure regulator to proper level (75 psi).
Loose connection at air hose quick disconnect adapter	Reseat adapter.
Water in air	Drain water separator.
Cause beyond maintenance scope of operator	Notify second maintenance echelon.

42. Pneumatic Equipment Stops During Operation

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

43. Pneumatic Equipment Will Not Start

Probable cause	*Possible remedy*
No air pressure-compressor topped	Start compressor.
Air pressure cut off at pressure regulator.	Adjust pressure regulator to obtain pressure of 756 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 maintenance echelon.

44. Water System Fills at Slow or Reduced Speed

Probable cause	*Possible remedy*
Valves set in wrong position.	Set valves in accordance with paragraph 15.
Source pressure low (auxiliary)	Check source pressure; adjust as necessary.
Drain valve open	Close valve (s) (par, 15).
Leak in water lines.	Check lines (fig. 20); repair leaks.
Water pump not operating correctly.	Notify second echelon mechanic.
Cause beyond maintenance scope of operator.	Notify second echelon maintenance.

45. Water System Equipment Stops During Operation

Probable cause	*Possible remedy*
Water pump stopped	Investigate cause of stoppage; repair and restart pump.
Failure of auxiliary source	Check incoming source pressure; change source or use storage tank for source.
Valve(s) inadvertently opened or closed.	Reset valves in accordance with paragraph 15.
Cause beyond maintenance scope of operator.	Notify second echelon maintenance

46. Water System Equipment Will Not Start

Probable cause	*Possible remedy*
Failure of water source	Operate system from storage tank
Failure of water pump.	Notify second echelon mechanic.
Pump not receiving electrical current	Check incoming source of electrical power; report discrepancies to responsible personnel.
Cause beyond maintenance scope of operator.	Notify second echelon maintenance.

47. 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.

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

48. Excessive Noise

Probable cause	*Possible remedy*
Equipment receiving improper lubrication.	Lubricate in accordance with paragraphs 30 and 31.
Equipment being used improperly.	Consult technical manual for equipment, use in accordance with recommendations in technical manual.
Cause beyond maintenance scope of operator.	Notify second maintenance echelon.

Section V. ELECTRICAL SYSTEM

49. General

The electrical system of Shop Set, Aircraft Maintenance, Semitrailer Mounted, C-3, Flaw Detection is a 110-220-volt, single-phase and 208-volt, three-phase system. Electrical power is supplied to the shop from an external source to an electrical distribution panel mounted in the right rear interior corner of the shop (fig. 4). A safety disconnect switch is mounted below the electrical panel in order that the power source may be disconnected from the interior of the shop. The electrical panel contains 14 thermal-magnetic circuit breakers for supplying power to the various circuits. The wiring diagram for Shop Set C-3 is contained in figure 7.

50. Electrical System, Electrically Driven Air Compressor

Operator maintenance of the electrical system of the air compressor consists of service and adjustments. The technical manual for compressor outlines the detailed maintenance procedures to be followed by the operator.

51. 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 water.

c. Adjustments. Check all male electrical connectors for security and condition before use. Adjust or tighten terminals as necessary. Female electrical connectors and receptacles require few adjustments beyond the tightening of screws. Check all female electrical connectors and receptacles for security and condition before use.

Warning

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

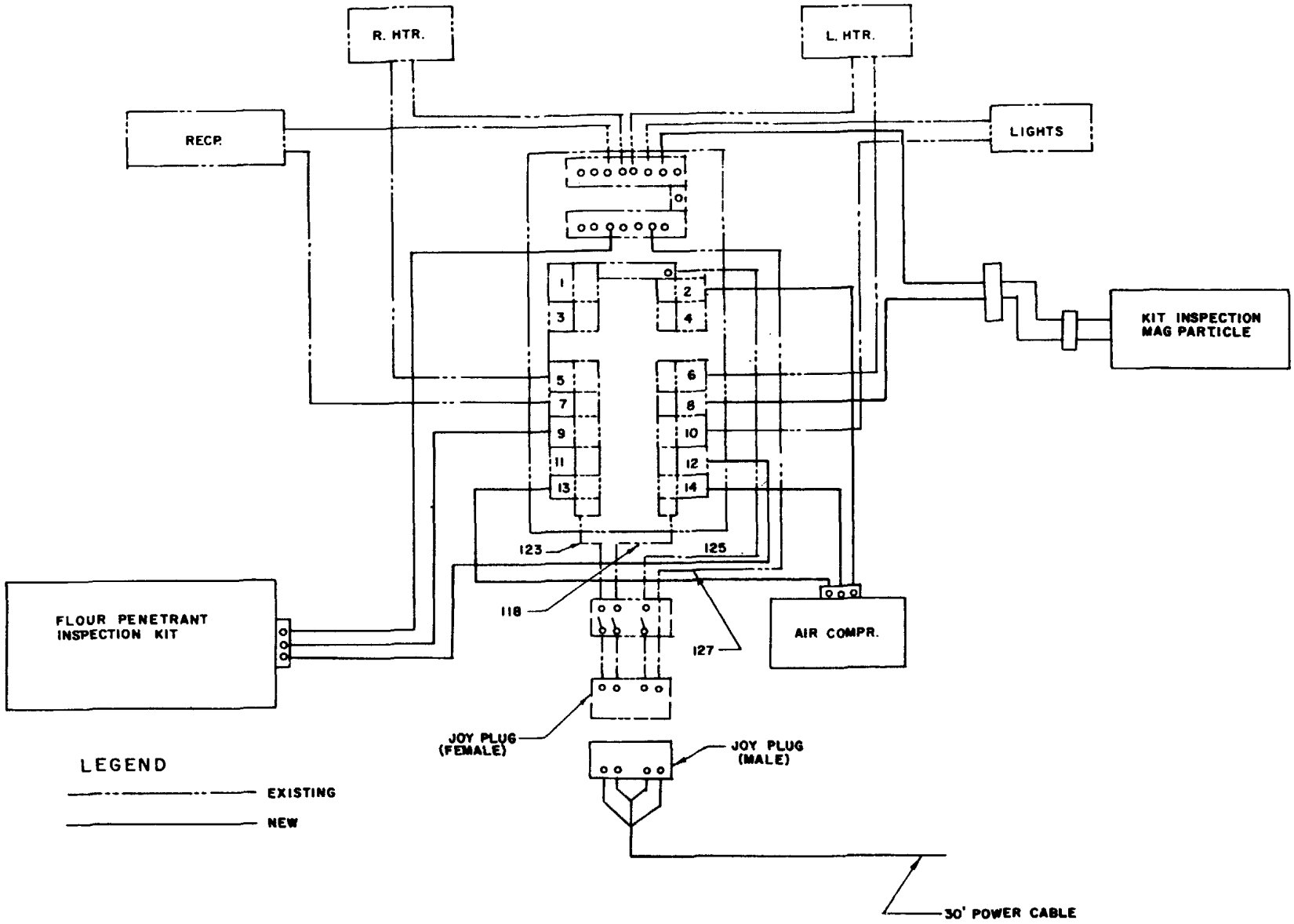


Figure 7. Wiring diagram, Shop Set C-3.

Section VI. PNEUMATIC SYSTEM

52. General

The pneumatic system of Shop Set, Aircraft Maintenance, Semitrailer Mounted, C-3, Flaw Detection, consists of an air compressor, electric driven motor, an air supply tank, controls and instruments, lines, and connectors. Compressor, tank, controls and instruments, lines and connectors are shown in figures 8 through 19.

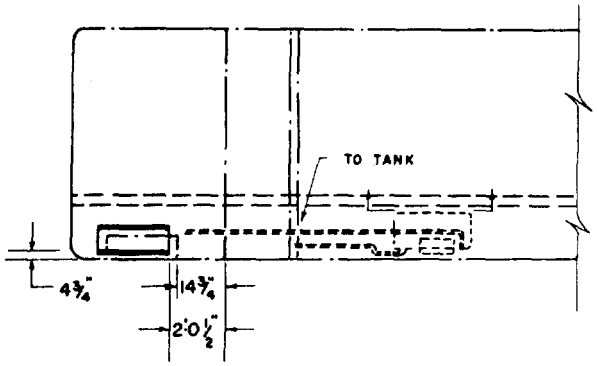


Figure 8. Pneumatic system installation, plan view.

53. Air Compressor

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

54. Air Supply Tank

The air supply tank is mounted underneath the shop floor at the forward left side of the shop (figs. 17 and 18). Operator maintenance consists of service and adjustments as outlined in the technical manual for the air compressor.

55. 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 required the use of more active compounds for the removal of foreign materials. Wipe off all moisture after cleaning.

Caution

Use only approved cleaning compounds.

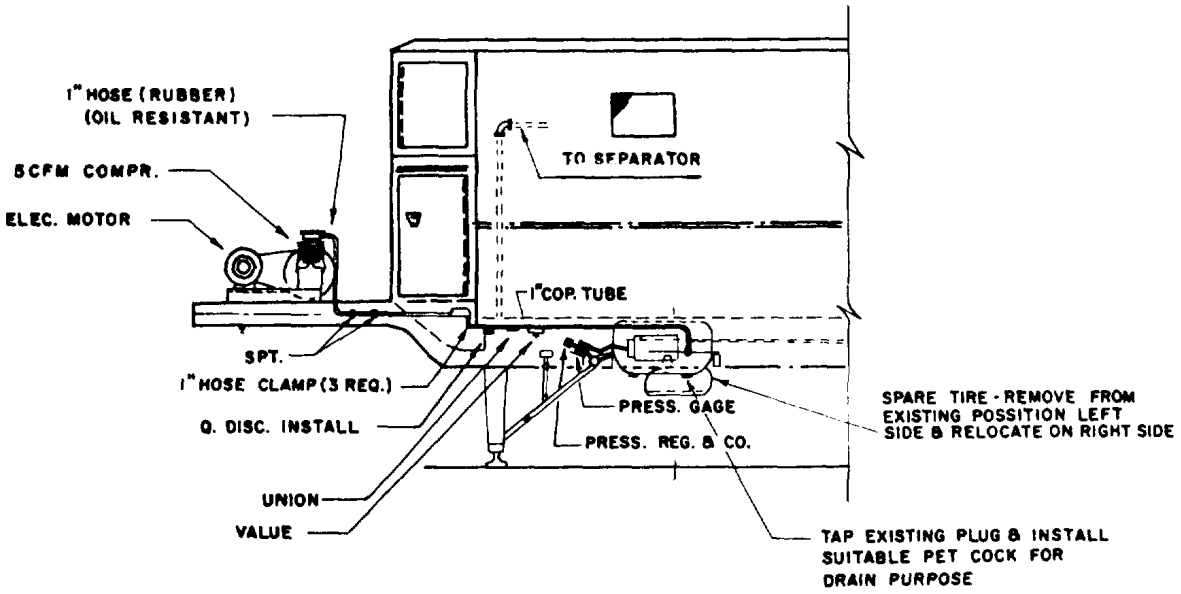
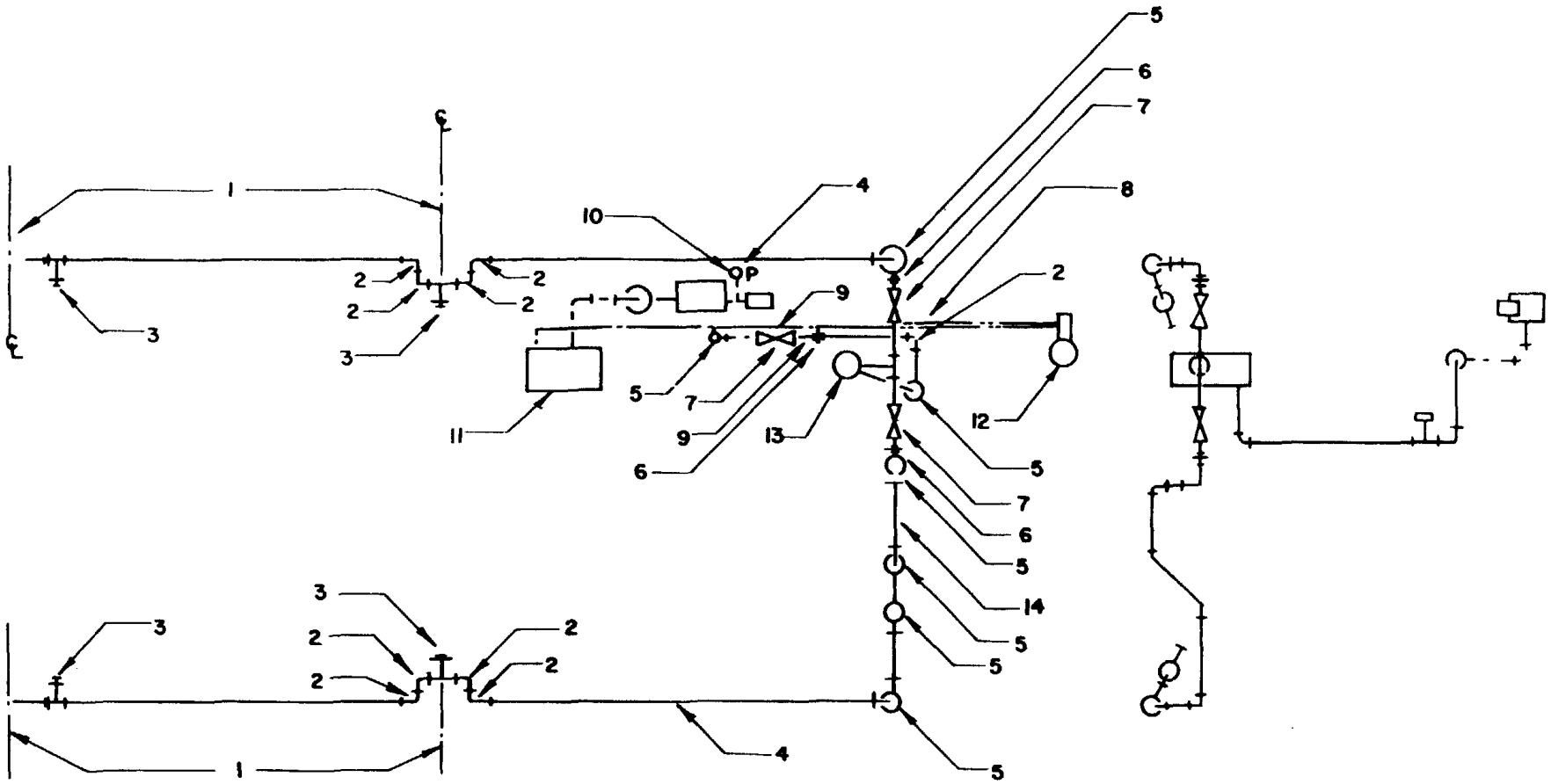


Figure 9. Left side elevation, pneumatic system.



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 10. Air line layout, top view.

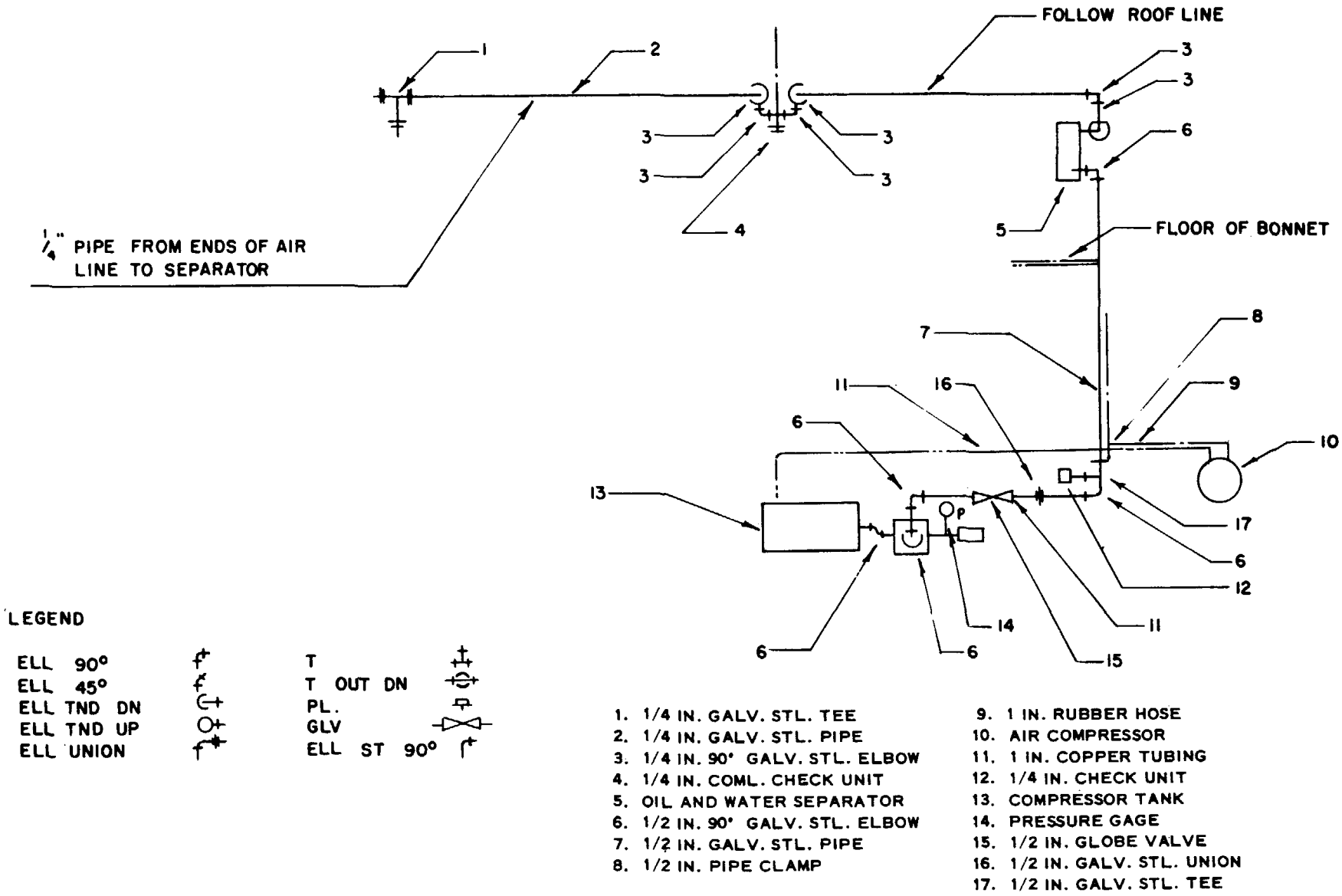


Figure 11. Air line layout, side view.

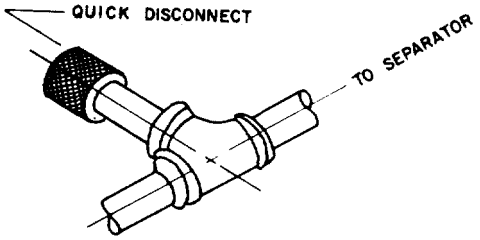


Figure 12. Quick disconnect fitting, compressor tank.

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 to be 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

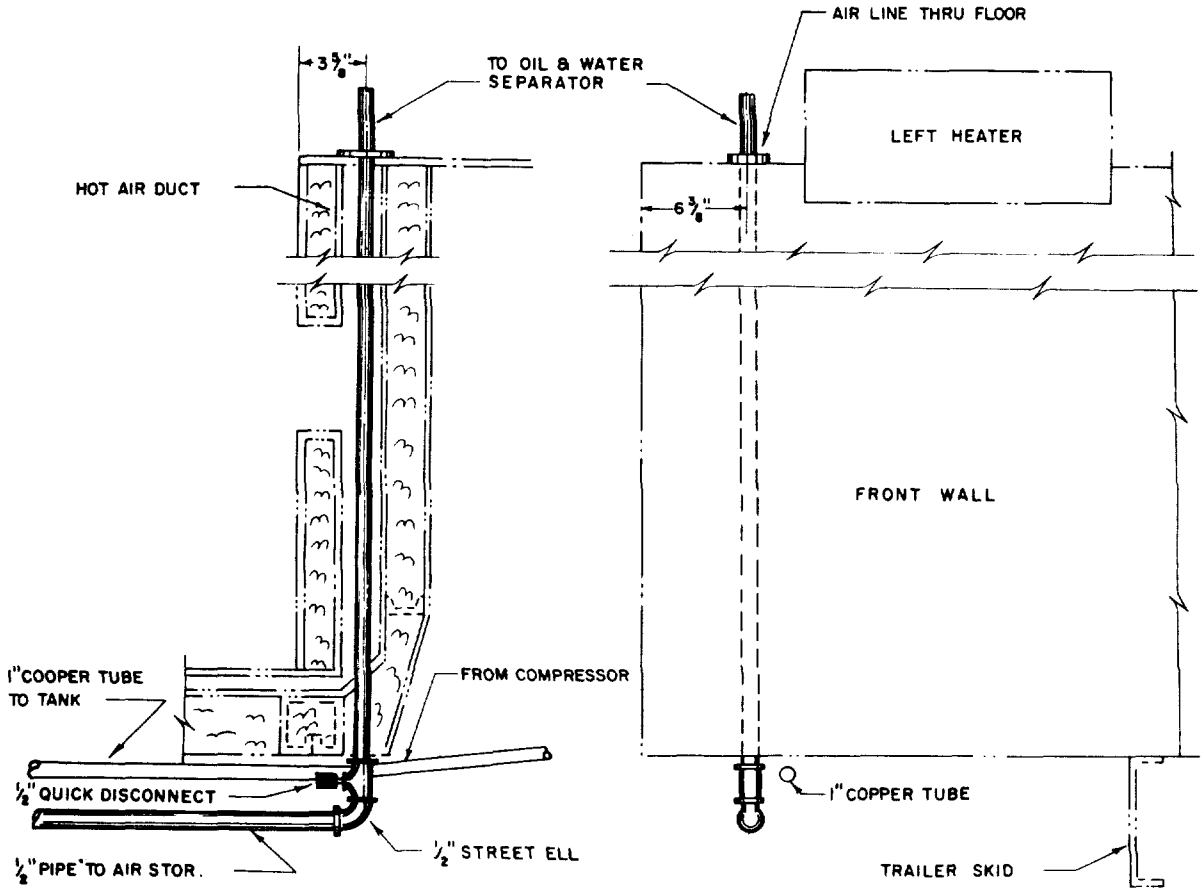


Figure 13. Air line layout, front view.

except as can be made by use of the controls. Controls of the pneumatic system include 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 11 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 unit operating pressure (75 psi) is obtained.

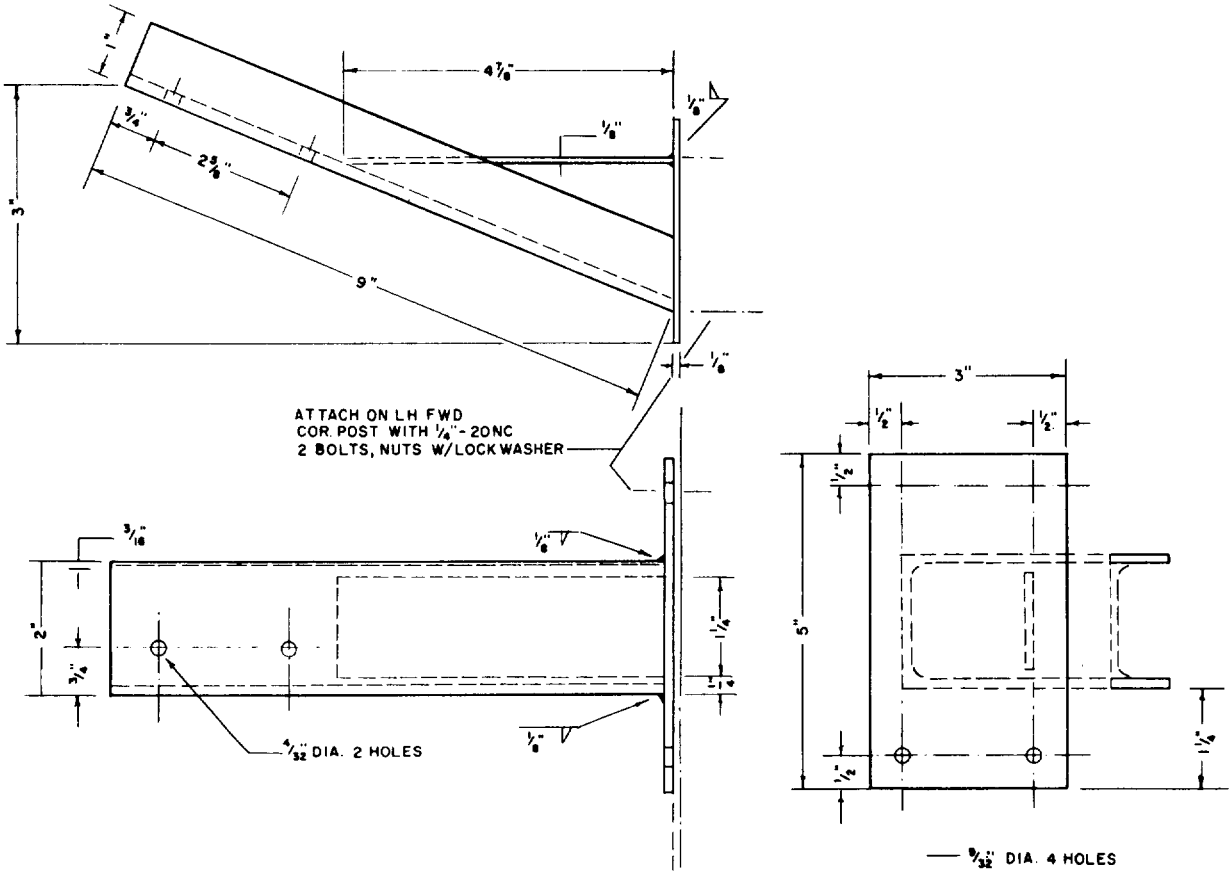


Figure 14. Separator mounting bracket.

56. Lines and Connectors

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

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

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

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

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

c. Adjustments. Adjustments of lines and connectors (figs. 10, 11, and 18) 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.

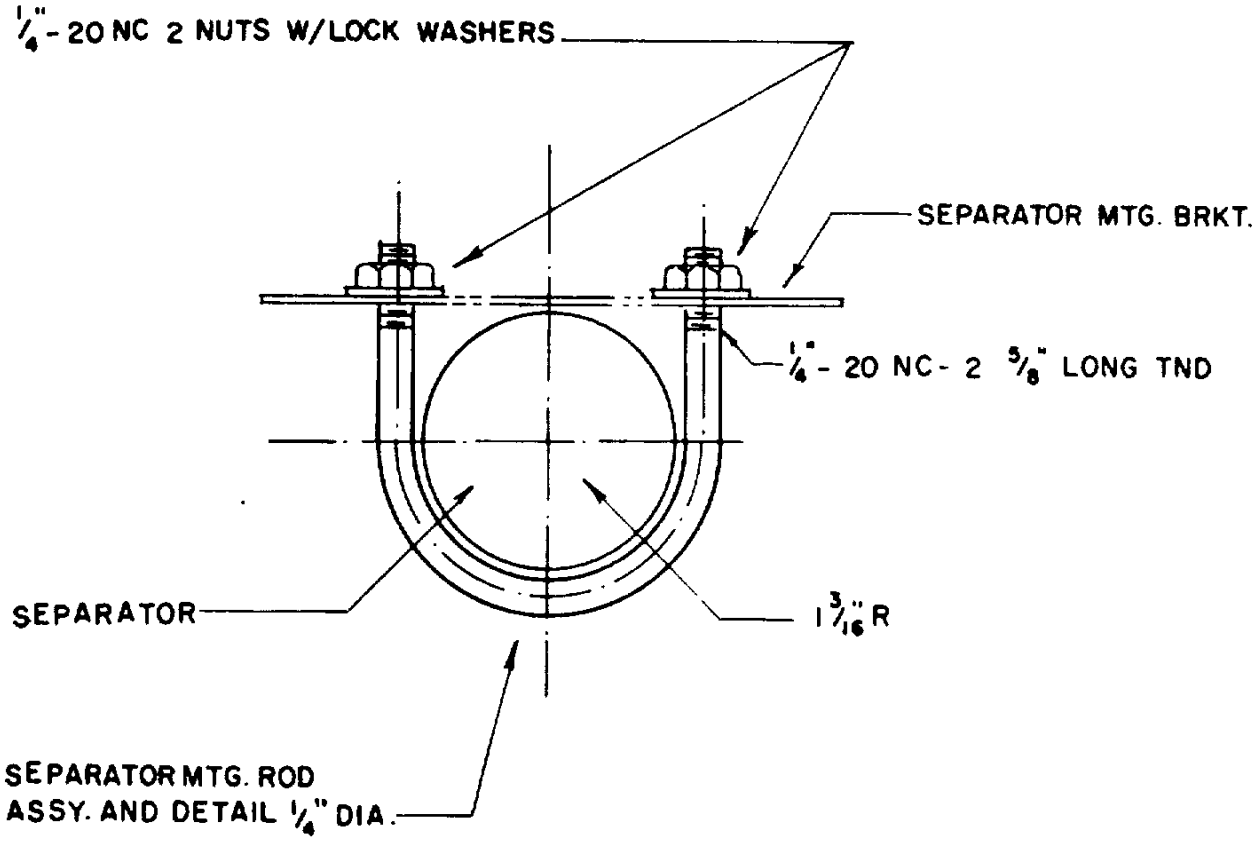


Figure 15. Separator mounting rod.

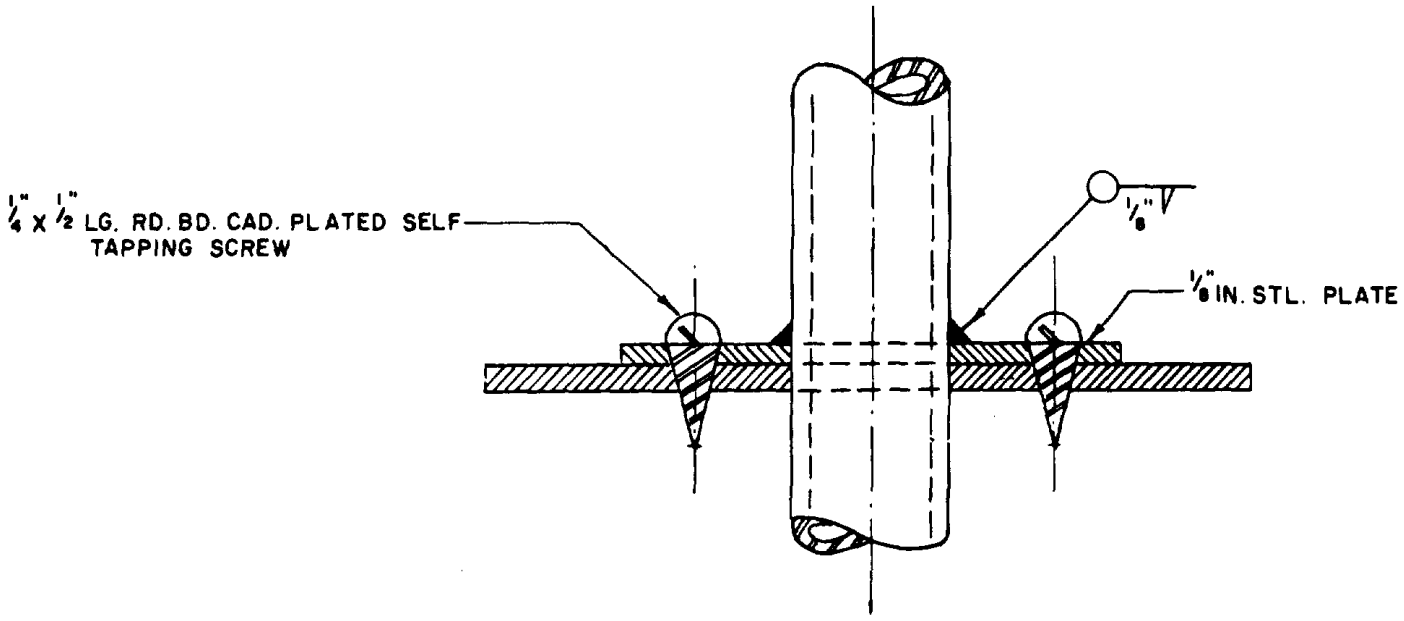


Figure 16. Airline mounting, floor.

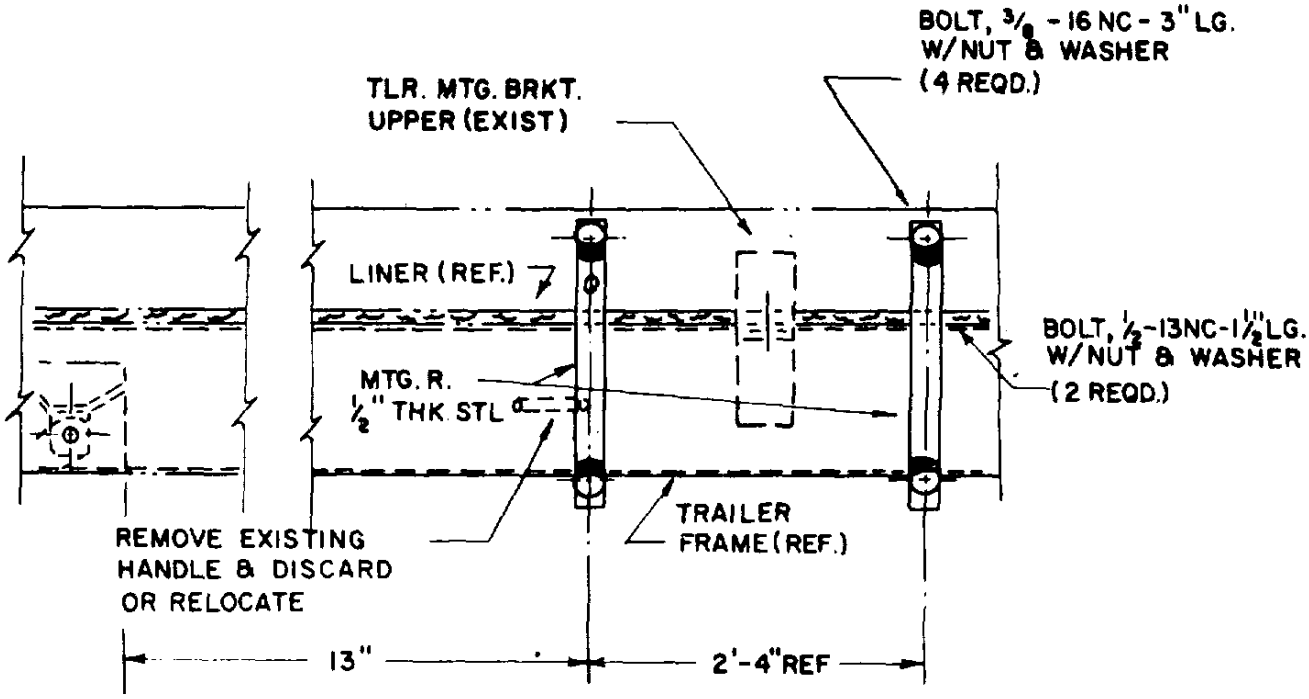


Figure 17. Air compressor tank installation, top view.

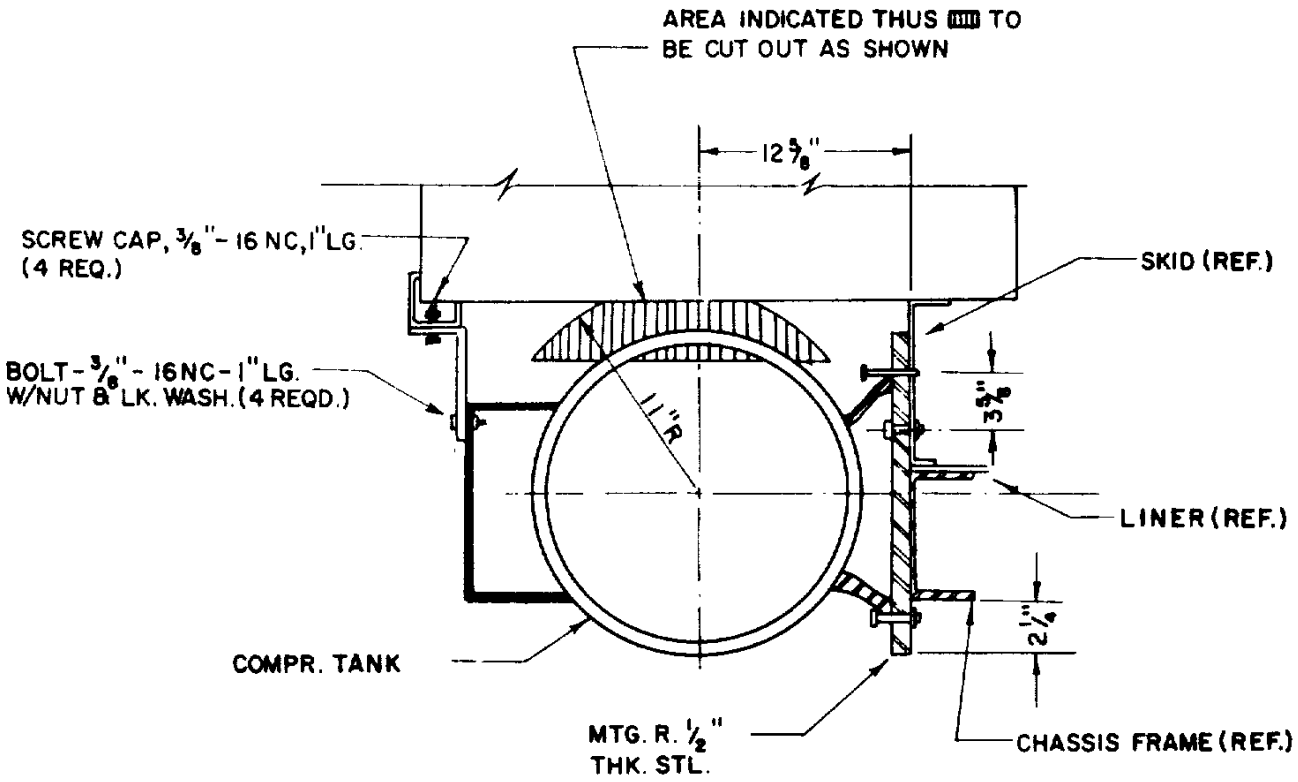


Figure 18. Air compressor tank installation, end view.

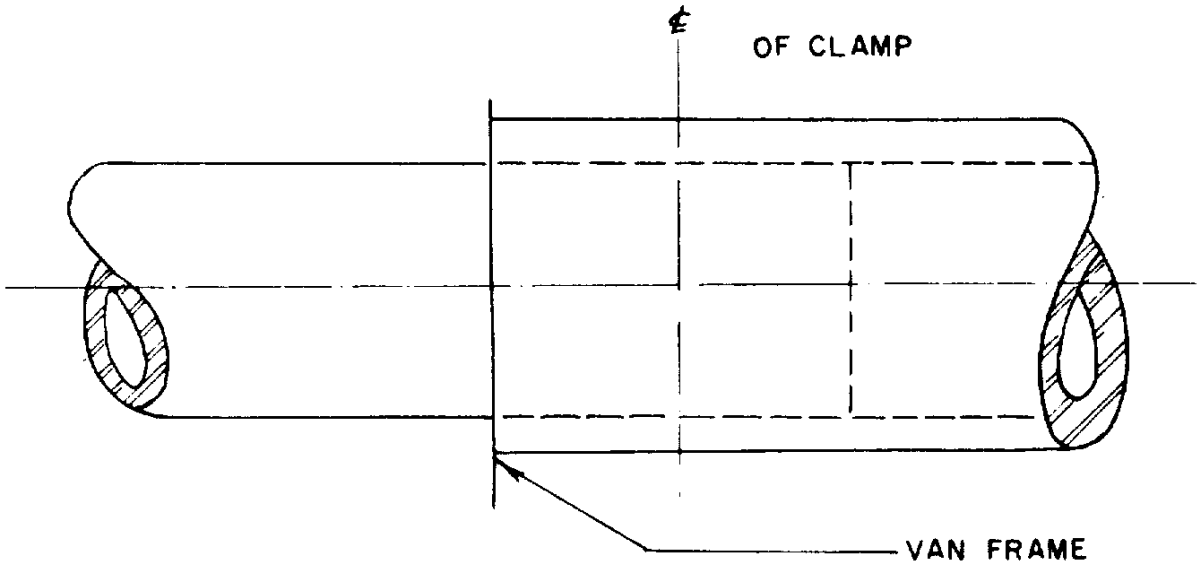


Figure 19. Pipe to hose connection; compressor to tank.

Section VII. WATER SYSTEM

57. General

The water system of Shop Set C-3 consists of an 85-gallon water tank, cover seal, baffles, tank cover, washer, water gages, valves, shallow well pump, strainer, 25 feet of fire hose for draining the system, tubing, lines, hose, plumbing fittings, and necessary mounting equipment; see figure 20 for diagram of the water system installation.

58. Controls and Instruments

a. General. Controls and instruments for the waiter system consist of valves, drains, strainers and gages (fig. 20). The operator is responsible for servicing and adjusting the controls and instruments.

b. Servicing. Clean controls and instruments with clean wiping cloths and clear water under normal operating conditions. A mild soap or detergent may be used for cleaning under abnormal conditions.

c. Adjustments. Perform only those adjustments authorized by maintenance allocation chart (app. II). Do not attempt adjustment of instruments except by use of controls provided.

59. Water Tank

The water tank (figs. 21 and 22), water tank cover, and water tank seal adapter are to be serviced and adjusted by the operator in accordance with the maintenance allocation chart. These responsibilities include cleaning, lubrication and minor repairs.

60. Tubing, Hose, and Lines

Operator maintenance of the tubing, hose, and water lines of the system consist of checking for leaks, broken -lines, inoperative fittings, and accomplishing minor repairs (app. II).

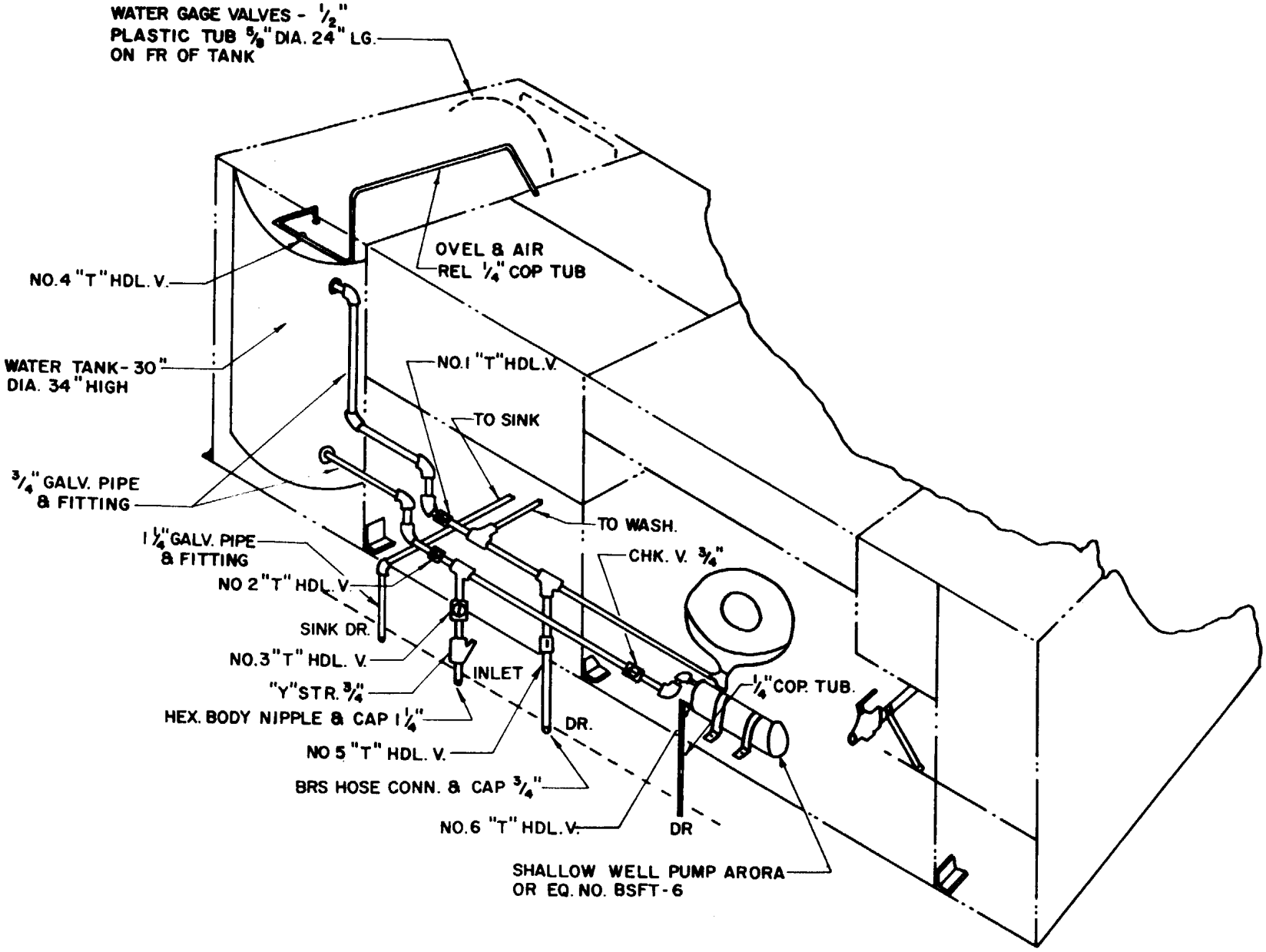


Figure 20. Diagram, water lines installation.

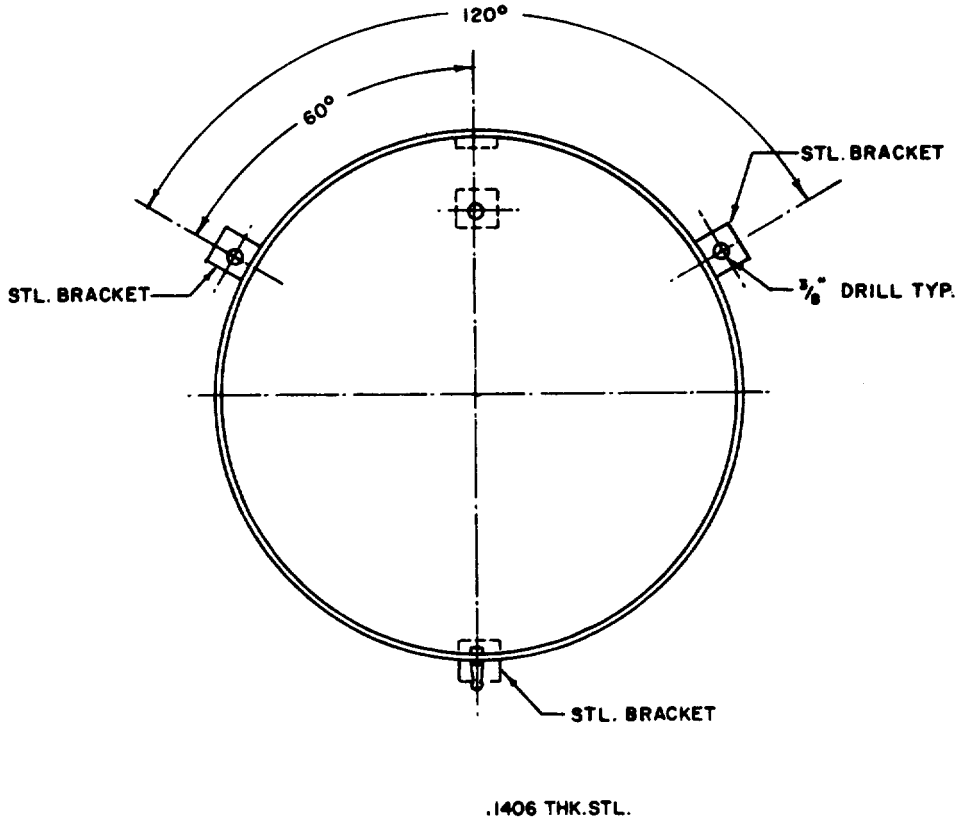


Figure 21. Water tank, end view.

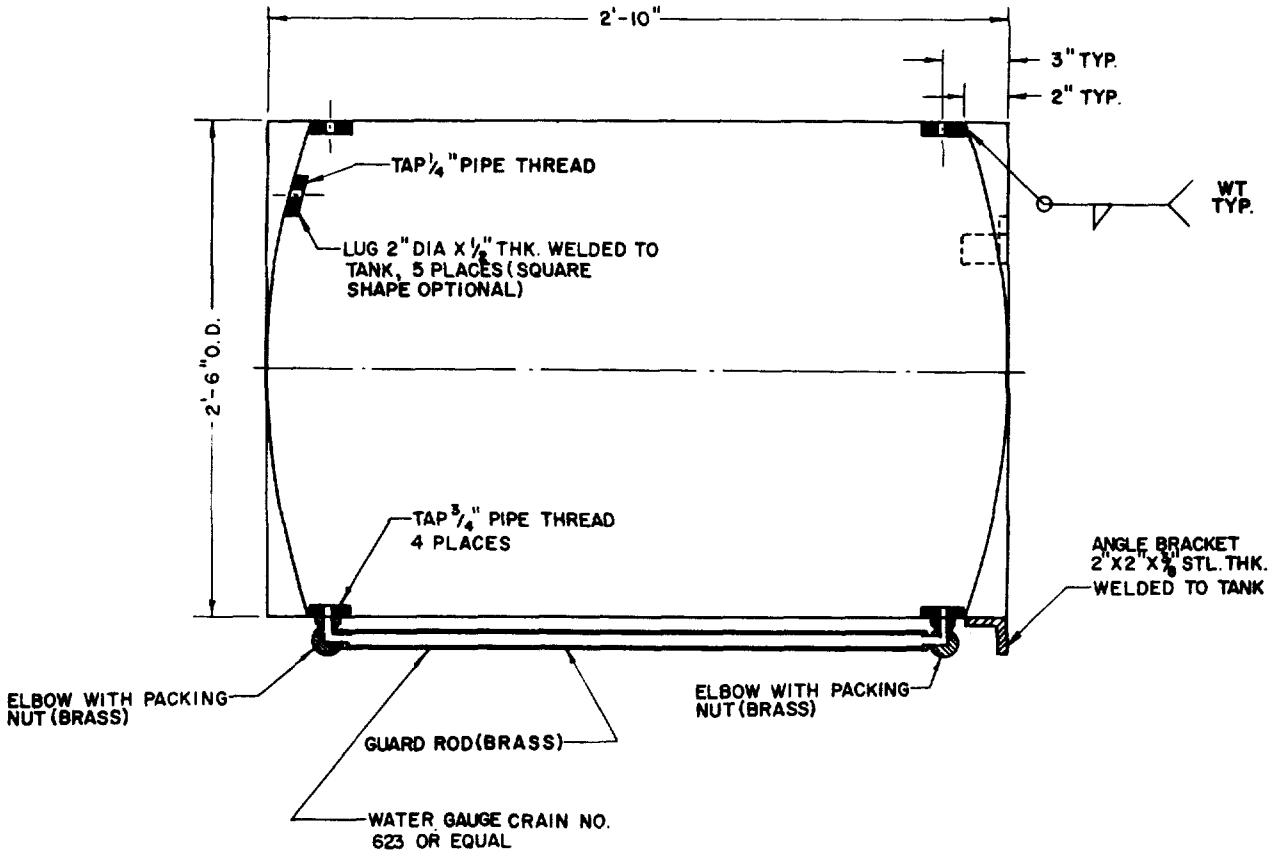


Figure 22. Water tank, side view.

Section VIII. UTILITY SYSTEM

61. General

The utility system of Shop Set, Aircraft Detection consists of one each type V storage maintenance, Semitrailer Mounted, C-8, Flaw cabinet. Layout of the utility system of the shop set is shown in figures 28, 24, and 25.

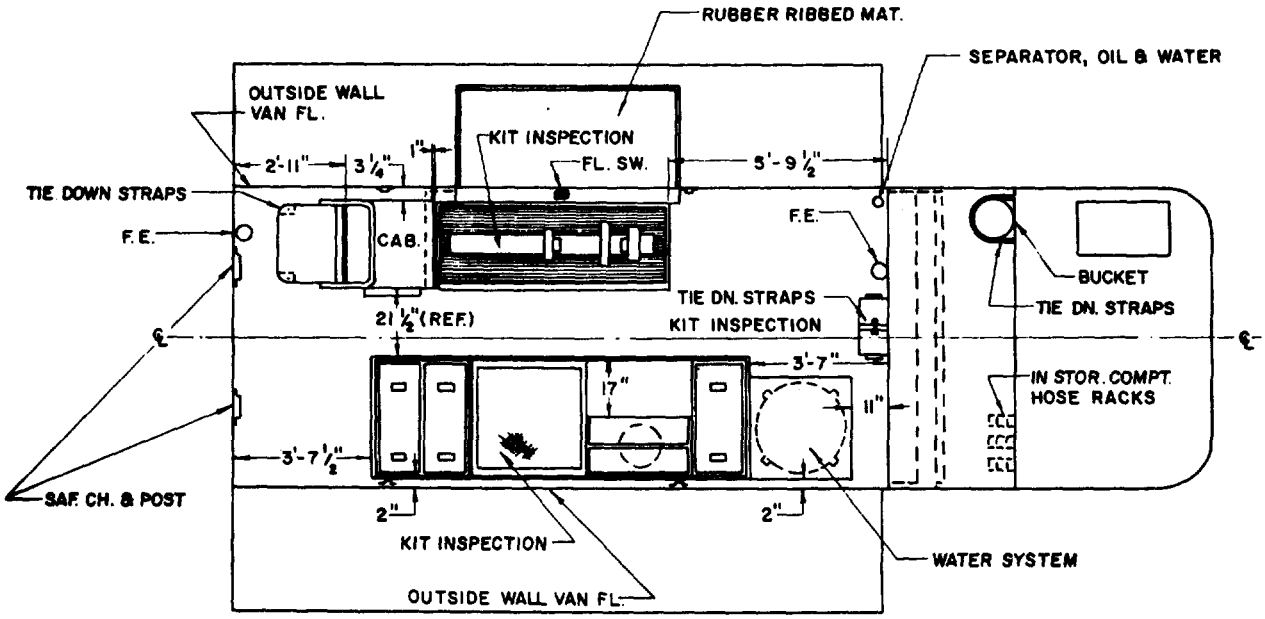


Figure 23. Floor plan, Shop Set C-3, top view.

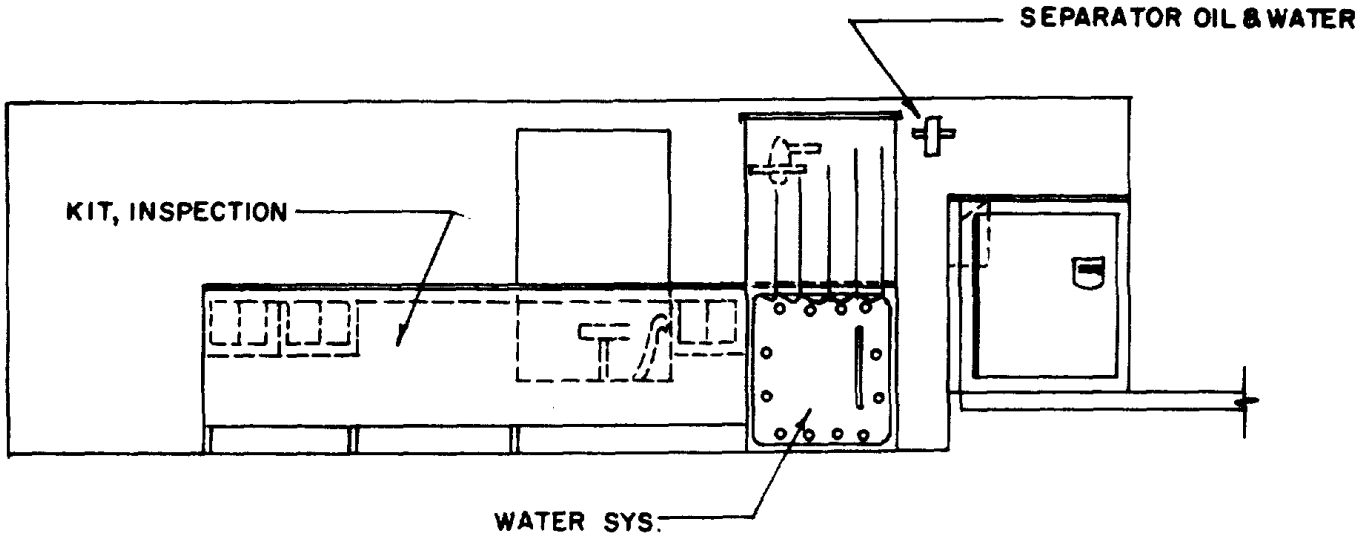


Figure 24. Floor plan, Shop Set C-3, right side view.

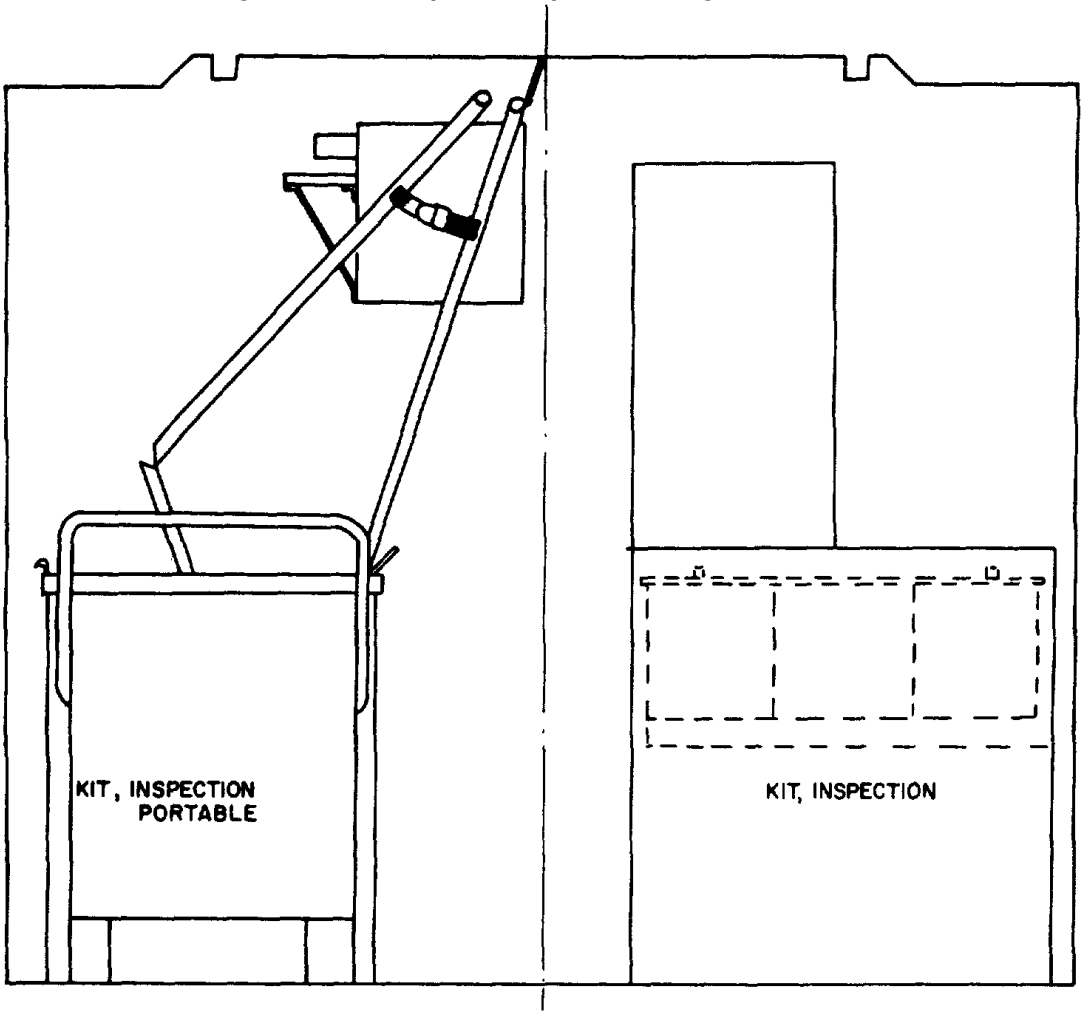


Figure 25. Floor plan, Shop Set C-3 rear, view.

62. Storage Cabinets

Operator maintenance of the storage cabinets is limited to service and adjustments. Service will consist of cleaning, lubrication, and other preventive maintenance services (pars. 32-35). Use a solution of water and mild soap or detergent for cleaning purposes under usual operating conditions. Cleaning under unusual operating conditions (pars. 19-27) 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 alining hinges, slides, locking bars, and closing points.

Note. Adjustments to storage cabinets should be made by the operator only when the operating efficiency will be impaired if the misalinement is not corrected.

CHAPTER 4

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

Section I. GENERAL

63. Purpose

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

64. 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 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

65. Shipment

The operator is responsible for the initial steps in preparing Shop Set, Aircraft Maintenance, Semitrailer Mounted, C4, Flaw Detection for shipment. These responsibilities consist of the following steps.

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

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

c. Install locking bars in cabinet drawers.

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

e. Store cables and hose in storage boxes.

66. Limited Storage

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

Note. When equipment is to be stored for 80 days or less, clean and oil with light lubricating oil, Federal Specification VV-O-26.

b. Operator Responsibility. The operator of the equipment is responsible for certain phases of preparation for limited storage; normally these responsibilities will coincide with those listed in paragraphs 6, 7, and 67 through 70. 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

67. 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 destructions, 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) Explosives-Requires suitable explosives or ammunition.

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

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

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

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

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

(2) Observance of appropriate safety precautions.

68. 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.

69. Destruction by Use of Explosives

a. Remove and empty portable fire extinguishers.

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

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

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

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

(4) Place one 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 four 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 6 feet of safety fuze (safety fuze 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 fuze are used, the fuze should be sufficiently long and so-positioned that it may be ignited from outside the shop set. Safety fuze, which contains black powder, and nonelectric blasting caps must be protected from moisture at all times. The safety fuze may be ignited by a fuze 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 fuze separated from the charges until required for use.

c. Detonate the Charges. If primed with nonelectric blasting cap and safety fuze, 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.

70. Destruction by Gunfire

a. Remove and empty portable fire extinguishers.

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

Warning: Firing artillery at 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

71. General

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

72. Unloading and Uncrating New Equipment

a. Unloadings. Remove shorting, blocks, tiedowns, and chocks before unloading equipment.

Warning: Remove nails and loose strapping from unloading area.

Caution: Lift only at hoisting points provided when equipment is to be unloaded from heights above ground level (TM 9-2330-238-14). Do not allow equipment to be dropped while unloading.

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

73. Depreservation

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

b. Remove preservatives 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 directed in chapter 9.

74. Inspection

Inspect all equipment for condition, correctness of assembly, security, and wear (pars. 32-35).

Section II. CONTROLS AND INSTRUMENTS

75. 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.

76. Electrical Controls and Instruments

These controls and instruments are provided to supply, regulate, and distribute the electrical power required to operate the shop. Detailed description, location, and illustrations are contained in paragraphs 8 through 11 and 49 through 51.

77. Pneumatic Controls and Instruments

Pneumatic controls and instruments regulate and distribute the compressed air required to operate the pneumatic equipment of the shop Refer to paragraphs 8 through 11 and 62 through 56 for detailed description, location, and illustration of pneumatic controls and instruments.

78. Water System Controls and Instruments

Controls and instruments in the water system are provided to regulate and distribute the liquids required to operate the shop. Refer to paragraphs 8 through 11 and 57 through 70 for description, location, and illustration of water system controls and instruments.

Section III. OPERATION UNDER USUAL CONDITIONS

79. General

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

80. Preparations for Use of Equipment

a. Exterior.

(1) Install ground stake, located in compartment below rear doors, by fastening cable to bolt provided with wingnut, on left rear skid (fig. 26).

(2) Position chocks.

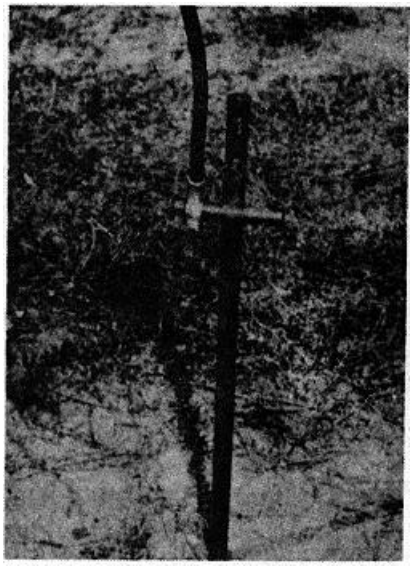


Figure 26. Installation of ground stake.

(3) Install the stabilizing jacks (fig. 27) and adjust them as necessary.

(4) Remove entrance ladders from rear doors and position as shown in figure 28.

(5) Open right rear door (fig. 28 and TM 9-2330-238-14).

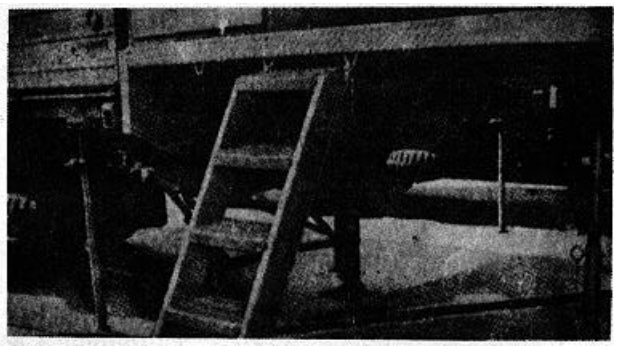


Figure 27. Installation and adjustment of stabilizing jacks; positioning front ladder.

b. Opening of van. All van sides open from inside the van (fig. 29 and TM 9-2330-23814)

(1) Release overcenter clamps, front and rear, at top of each door.

(2) Release locks on center post, two on each side (fig. 30 and TM 9-2330-23814).

(3) Push top and bottom doors outward at the same time (fig. 81).

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

(4) Install chain guard railing; (fig. 82 and TM 9-2330-238-14).

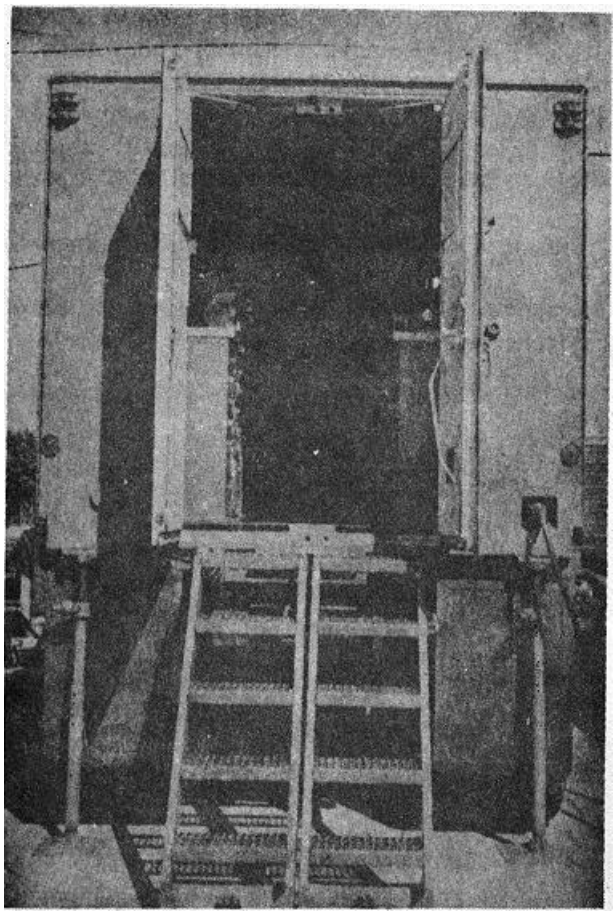


Figure 28. Positioning rear entrance ladders and opening rear doors.

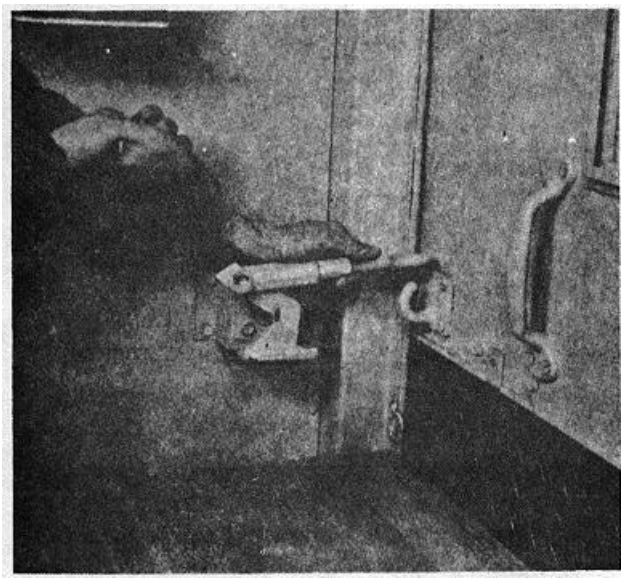


Figure 29. Opening folding shop sides, step I.

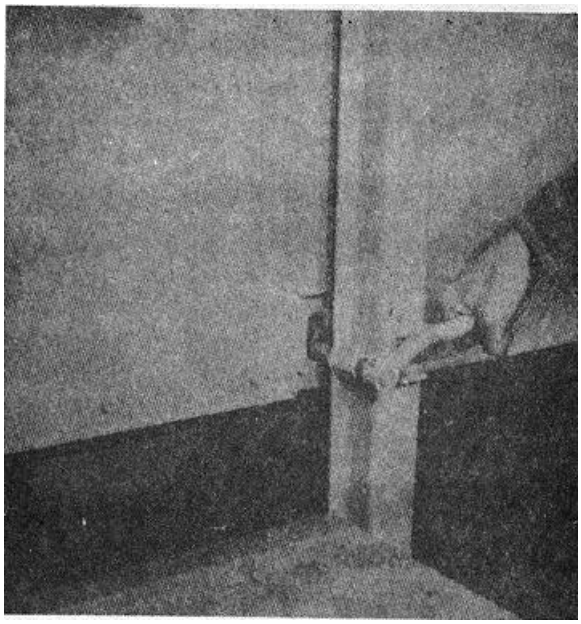


Figure 30. Opening folding shop sides, step II.

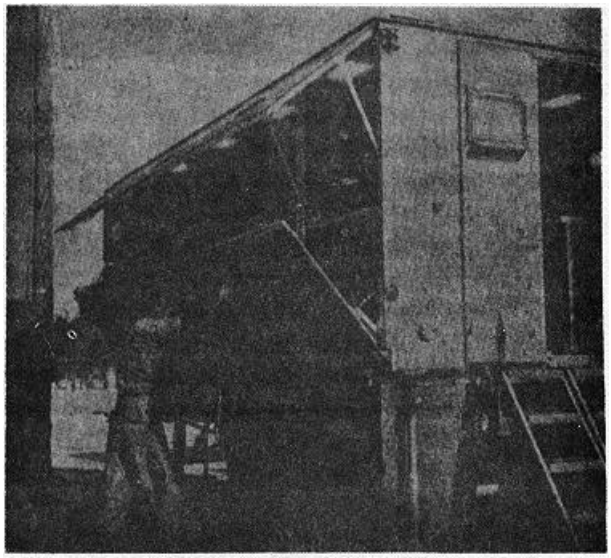


Figure 31. Opening folding shop sides, step III.

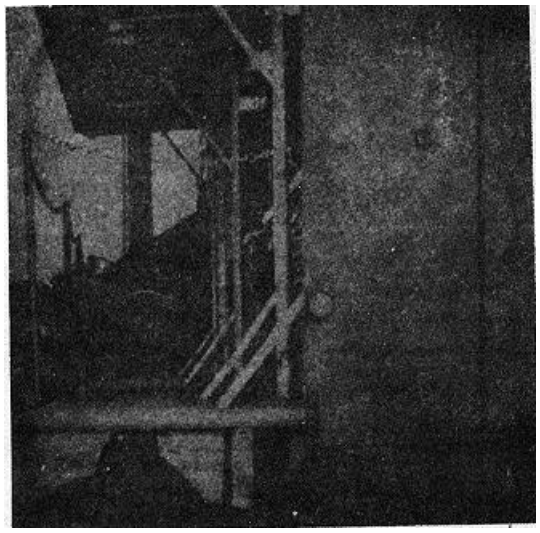


Figure 32. Chain guard railing installation.

81. Shutdown of Shop Set

a. Shutdown instructions for the units comprising Shop Set, Aircraft Maintenance, Semi-trailer Mounted, C3, Flaw Detection, are contained in the technical manual issued for the individual items. It is essential that the operator understand these instructions.

b. Disconnect external power source.

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

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

e. Check security of chocks.

82. 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 procedure and details of operation

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

d. Pneumatic System-Auxiliary Power Operated.

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

(2) Install line from auxiliary to air supply tank (fig. 12).

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

e. Water System.

(1) Inspect lines, hose, tubing, fittings, valves, gages, tank cover seal, tank, cover, drain, pump, and mountings for security and condition.

(2) Check operation of pump or outside water source for flow and pressure.

(3) With system operating, check lines, hose, pump, tubing, controls, instruments, tank cover, and seal for leaks, security, and proper operation.

83. Movement of Equipment

a. Open van in accordance with instructions contained in paragraph 80.

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.

d. Disconnect external power source(s), electrical or pneumatic.

e. Remove and stow bonding stake

f. Remove chocks and secure in travel position.

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

84. General

Auxiliary equipment may be operated in conjunction with Shop Set, Aircraft Maintenance, Semitrailer Mounted, Set C-3, Flaw Detection, by use of an external power receptacle for electrical connections and by use of an adapter installed on the air supply tank for pneumatic connections. A hose connection (fig. 20), is provided to connect an auxiliary water source to connect an auxiliary water source to the water system.

85. External Power Receptacle

The external power receptacle is mounted at the right rear outside corner of the shop. This is a female receptacle, designed to connect with the male plug attached to the power cord from the generator.

86. Air Supply Tank Adapter

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

Note. This adapter is the same as is used to receive an external air power source: therefore, it is usable only when the compressor is being operated.

Section V. OPERATION UNDER UNUSUAL CONDITIONS

87. General

This section contains information pertinent to second echelon maintenance operation of Shop Set, Aircraft Maintenance, Semitrailer Mounted, C3 Flaw Detection, under unusual conditions. Refer to paragraphs 19 through 27 for additional information. Report recurrent failure of equipment resulting from operation under unusual conditions on DA Form 468.

88. Removable Canvas Side Walls

The removable canvas sidewall has four sections. The side walls are fastened at the top with snap-type fasteners. The bottoms are attached with web belting, incorporating quick-releases and belt-tightening features. The bottom edges also have ½-inches grommets so that rope may be used in lieu of the web straps when needed. Attached to the bottom side doors are cleats for use with either the web strapping or the rope (fig. 33).

Caution: Canvas should not be stored when wet.

89. Extreme Cold Weather Conditions

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

90. Extreme Hot Weather Conditions

Frequent inspections of bearings, cooling systems, and lubricants should be accomplished

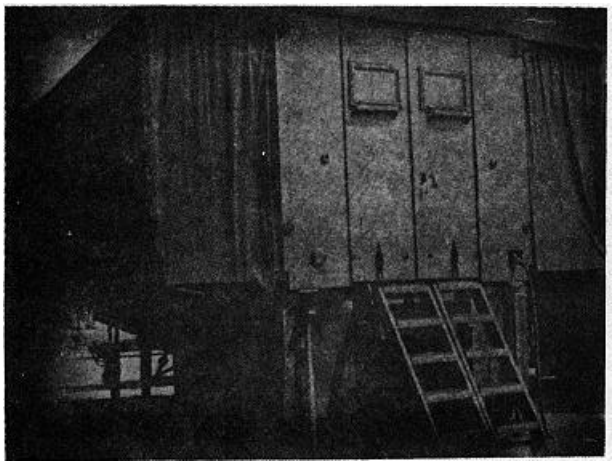


Figure 33. Canvas sidewalls installation.

in extreme hot weather to insure proper operation of the equipment. Refer to paragraph 22 for additional instructions regarding operation of equipment in extreme hot weather condition.

91. 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 extreme wet climate are listed in paragraph 23.

92. 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 combat corrosion. Treat unprotected surfaces and surfaces in contact with salt water as directed in paragraph 25.

93. Operation in Extreme Dust Conditions

Inspect machined surfaces, bearings, and lubricated surfaces for dust accumulation. Clean bearings and surfaces as directed in paragraphs 30 through 35.

94. 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 paragraph 27 and in the technical manual for the item of equipment.

CHAPTER 6

MAINTENANCE INSTRUCTIONS (SECOND ECHELON)

Section I. SPECIAL ORGANIZATIONAL TOOLS AND EQUIPMENT

95. Tools and Equipment

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.

96. Repair Parts

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

Section II. LUBRICATION

97. General

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

98. Special Lubrication Instructions

Refer to paragraphs 6, 7, 30 through 35, 79 through 83, and 87 through 94 for detailed lubrication procedures for the shop.

Section III. PREVENTIVE MAINTENANCE SERVICE

99. 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 in table II 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 items and instructions constitute minimum inspection requirements for the equipment.

100. Weekly and Monthly Preventive Maintenance

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

Section IV. TROUBLESHOOTING

101. 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.

102. 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 paragraphs 103 through 113.

103. 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.

104. 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

105. Electrical Equipment Will Not Start

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

106. Pneumatic Equipment Operates at Slow or Reduced Speed

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

107. Pneumatic Equipment Stops During Operation

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

108. 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 valve	Check air pressure at regulators; replace check valves as necessary.
Break in air hose of equipment	Check air hose and replace as necessary.
Cause beyond repair scope of operator.	Notify supporting field maintenance unit.

109. Water System Operates at Slow or Reduced Speed

Probable cause	*Possible remedy*
Low source pressure	.Check gages; adjust controls to obtain correct pressure.
Low source pressure (auxiliary).	Check incoming pressure gage; notify responsible personnel.
Leak in water lines, hose, or fittings	Check pressure; repair leaks; tighten connections
Cause beyond maintenance scope of operator.	Notify supporting field maintenance unit

110. Water System Equipment Stops During Operation

Probable cause	*Possible remedy*
Failure of source power (pump) .	Position valves; place pump switch in OFF position; use auxiliary water source.
Failure of source power (auxiliary) .	Position valves; place pump switch in ON position; use water tank.
Inoperative valve(s)-Replace valve(s).	
Cause beyond maintenance cope of operator.	Notify supporting field maintenance unit.

111. Water System Equipment Will Not Start

Probable cause	*Possible remedy*
Power source disconnected	Check electrical connection of pump, shut off valve on intake; adjust as necessary.
Valves positioned wrong.	Check position of valves; reposition as necessary.
Broken line or hose	Repair or replace lines or hose
Cause beyond maintenance scope of operator .	Notify supporting field maintenance unit.

112. 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 neces sary.
Cause beyond repair scope of operator.	Notify supporting field maintenance unit.

113. Excessive Noise

Probable cause	*Possible remedy*
Lack of lubrication	Lubricate equipment in accordance with paragraphs 30 and 31.
Improper use of equipment	Check specific manuals for use of equipment.
Cause beyond repair scope of operator.	Notify supporting field maintenance.

Section V. RADIO INTERFERENCE SUPPRESSION

114. Purpose

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

b. Suppression in the equipment is accomplished by the use of resistor suppressors and

capacitors. In addition, metal parts of the equip ment are formed into a shield by use of braided bond straps and toothed washers, confining electrical disturbances so they cannot disturb receiving equipment.

115. Inspection

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

Section VI. ELECTRICAL SYSTEM

116. General

A detailed description of the electrical system is contained in paragraphs 49 through 51.

117. Electric System, Electrically Driven Air Compressor

Second echelon maintenance for the electrical system of the air compressor (fig. 9), consists of inspection and replacement of parts in accordance with the technical manual for the compressor and paragraphs 99 through 113.

118. Electrical Wiring Installation

a. General. The electrical wiring installation (fig. 7) is comprised of
(1) Power cord for connecting auxiliary power source to the external power receptacle of the shop.
(2) Conduit encased wires connecting the external power receptacle with the safety disconnect switch and continuing to the control panel.
(3) Wiring from the control panel to the various receptacles which supply current to the equipment to be operated.
Note. The power cord of the electric motor of the air compressor is connected directly to the control panel and does not pass through a receptacle.

b. Second Echelon Maintenance. Inspect and replace, as necessary; wiring, connectors, receptacles, and conduit in accordance with instructions in paragraphs 99 through 113 and appendix II.
Warning: Disconnect auxiliary power source before servicing.

119. Electrical Switches and Circuit Breakers

a. General Electrical switches and circuit breakers are installed in the electrical system (fig. 7) 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 99 through 113 and appendix II.

120. Lighting System

Inspect and replace inoperative lighting tubes or bulbs in accordance with instructions in paragraphs 99 through 113 and appendix II.
Note. For details of shop lighting system, refer to TM 9-2330-238-14.

Section VII. PNEUMATIC SYSTEM

121. General

A detailed description of the pneumatic system is contained in paragraphs 50 through 56.

122. Air Compressor

Second echelon maintenance for the air compressor (fig. 9) consists of inspection and replacement of parts in accordance with the

technical manual for the compressor and paragraph 99 through 113.

123. Air Supply Tank

Inspect and replace parts of air supply tank (fig. 17) in accordance with technical manual for compressor and paragraphs 99 through 118.

124. Lines and Hoses

Second echelon maintenance of air lines and air hose (fig. 10, 11, and 13) will consist of inspection and replacement of parts in accordance with paragraphs 99 through 113 and appendix II.

125. 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 99 through 113. Refer to paragraphs 76 through 78 for description, location, and illustration of controls and instruments.

Section VIII. WATER SYSTEM

126. Shallow Well Pump

Second echelon maintenance of the shallow well pump will consist of service, inspection, and replacement of parts in accordance with the technical manual for the pump.

127. Water Tank, Seal Adapter and Cover

Second echelon maintenance is responsible for inspection, service, and replacement of parts in accordance with appendix II.

128. Lines, Hose, Tubing, Fittings, and Strainers

Inspect, service, and replace parts as authorized by appendix II.

129. Controls and Instruments

Second echelon maintenance of water system controls will consist of inspection, service, and repair in accordance with paragraphs 99 through 118 and appendix II.

Section IX. UTILITY SYSTEM

130. General

Second echelon maintenance of storage cabinets consists of inspection and replacement of parts as authorized by appendix II. Inspect and replace parts in accordance with instructions in paragraphs 99 through 113.

131. Specific Maintenance

Aline hinges, slides, fasteners, mountings, and locking devices; service in accordance with appendix II.

CHAPTER 7

SHIPMENT AND LIMITED STORAGE (SECOND ECHELON)

Section I. SHIPMENT WITHIN CONTINENTAL UNITED STATES

132. General

Before shipment of the shop set, within the continental United States, perform the procedures for limited storage listed in paragraphs 140 through 146.

133. Preparation for Shipment

In addition to the instructions contained in paragraphs 65 and 66 perform the preparation listed in TM 9-2330-23814.

134. Hoisting, Handling, and Loading

Refer to TM 9-2330-238-14.

135. Securing

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

136. Methods of Transportation

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

137. 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 applicable Army regulations. 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

138. General

The procedures for shipment outside continental United States, are essentially the same as those listed in paragraphs 132 through 137. Exceptions are in the methods of preparation for shipment; marine transportation will normally be used and the shop set will be secured in cargo holds or on decks of ships. Refer to TM 9-2330-238-14, for methods of securing, net handling, and boom procedures.

139. Preparation for Shipment

Waterproof the shop set, using methods outlined in TM 9-2330-238-14, and in paragraphs 140 through 146. Refer to paragraphs 25 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 MILB-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

140. 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.

141. Cleaning

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

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

142. Complete Lubrication

Refer to paragraphs 30, 31, 97 and 98.

143. Preservative Application

Coat precision machined surfaces with preservative conforming to Military Specification MIL-P-21260, Grade 2, or with preservative conforming to Military Specification MIL-C6259, Type I, mixed with lubricating oil, in proportion of one part of preservative to three parts of lubricant.

144. 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 MIL-B-121, Grade A, in addition to the normal storage procedures outlined in the technical manual for the item.

145. Moisture Proofing

a. Hang one humidity indicator, MS-2000S, inside a window in such a manner as to be visible from the outside.

b. Place 213 units of desiccant, Military Specification MIL-B-B464, 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 airtight containers and installed in van. It takes on moisture rapidly.

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

146. Inspection of Equipment In Limited Storage

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

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

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

b. Work sheet and Preventive Maintenance. DA Form 460 and DD Form 814, will be executed on each major item or the equipment when equipment is initially placed into limited storage and every 80 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

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

148. Unloading and Uncrating New Equipment
a. Unloading. Remove shoring, blocks, tiedowns, and chocks before unloading equipment.

Warning: Remove nails and loose strapping from unloading area.
Caution: Lift only at hoisting points provided when equipment is to be unloaded from heights above ground level (TM 9-2330-23814).

b. Uncrating and Servicing New Equipment. Uncrating and servicing procedures normally will be those outlined in paragraphs 72. Additional information required for unloading specific item are contained in the technical manual for the item.

c. Depreservation. Procedures for depreservation of new equipment normally will be as outlined in paragraph 73.

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 presoaking or by other methods as necessary. Lubrication of new parts will be as prescribed in the appropriate lubrication order.

149. 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 11 chronologically from top to bottom in rows, counterclockwise around the interior of the shop, starting at the right rear.

Tool and Equipment Drawer Location Semitrailer Mounted, C-3, Flaw Detection

Storage Drawer No.	Nomenclature	Total
1	Apron, battery workers, cotton-twill	3
2	Cleaning gun, pneumatic	2
2	Coupling half, quick disconnect, female fluid connection end	4
2	Coupling half, quick disconnect, male 4 fluid connection	
1	Faceshield, industrial plastic mask.	2
7	Field indicator, pocket size, magneto-meter	1
1	Gloves, rubber, men's synthetic	8
2	Gun, air blow, straight design	2
11	Hose, rubber, air, 25 ft. lg.	2
11	Hose, water, 50 ft. lg. w/coupling	1
6	Light, extension, 100 ft. lg. w/explosion proof globe.	2
7	Magnifier, glass, 5 in. focus	2
7	Mirror, inspection (snap-on GA--51)	2
2	Nipple, pipe, brass 1/4 in.	2
3	Oil gun, pneumatic, 32-oz. cap.	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 figure 23 through 25 for floor plan of shop set.

c. Inspection Kit, Fluorescent, Portable. This kit is mounted at the top center of the forward wall of the shop (fig. 23). Mounting components are shown in figures 34 and 38. Straps and loops for mounting other equipment are shown in figures 35, 36, 37, 39, and 40.

d. inspection Kit, Fluorescent. This kit is mounted at the center of the right side of the shop (fig. 23). Mounting components are shown in figures 38 and 41 through 44.

e. Inspection Kit, Magnetic Particle, Stationary. This kit is mounted at the center of left side of the shop (fig. 23). Mounting components are shown in figures 35, 38, 39, and 45 through 50.

f. Inspection Kit, Magnetic Particle, Portable. This kit is mounted at the rear on the left of the shop. Mounting components are shown in figures 38, 51, 52, and 53.

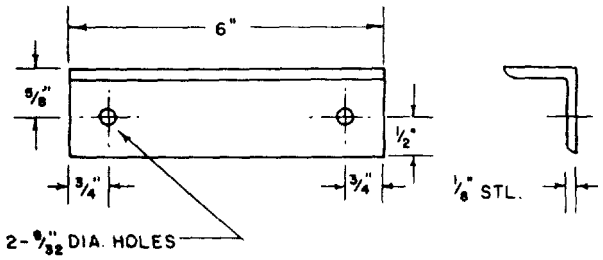


Figure 34. Inspection kit guide angles.

g. Can Storage Rack. The can storage is located immediately aft of the forward storage compartment (fig. 20), Details are shown in figures 54 and 55.

h. Buckets, 14-quart, General Purpose. The buckets are mounted on the left side of the front storage compartment (fig. 23). Tiedown straps are shown in figure 38.

i. Hose Racks. Racks for storing the hose are located in the forward storage compartment, right side (fig. 23). Components are shown in figure 56.

j. Portable Grinder Mounting. The mounting for the portable grinder is located on the type V storage cabinet (fig. 23). Detail of the mounting is shown in figure 57.

k. Water System. The water system (figs. 20-22) is mounted on the right side of the shop (figs. 23 and 24). Components and mounting details are shown in figures 58 through 63.

l. Storage Cabinets, Type V, The storage cabinet is mounted at the left rear of the shop (fig. 23). Typical mounting method is shown in figure 64.

m. Compressor, Reciprocating, Power Driven. The compressor and electric motor are mounted on the forward platform of the shop (fig. 23). Mounting details are shown in figure 65. The air tank for the compressor is mounted underneath the forward floor of the shop (figs. 17 and 18). Fabrication of mounts and mount installations are shown in figures 66 and 67.

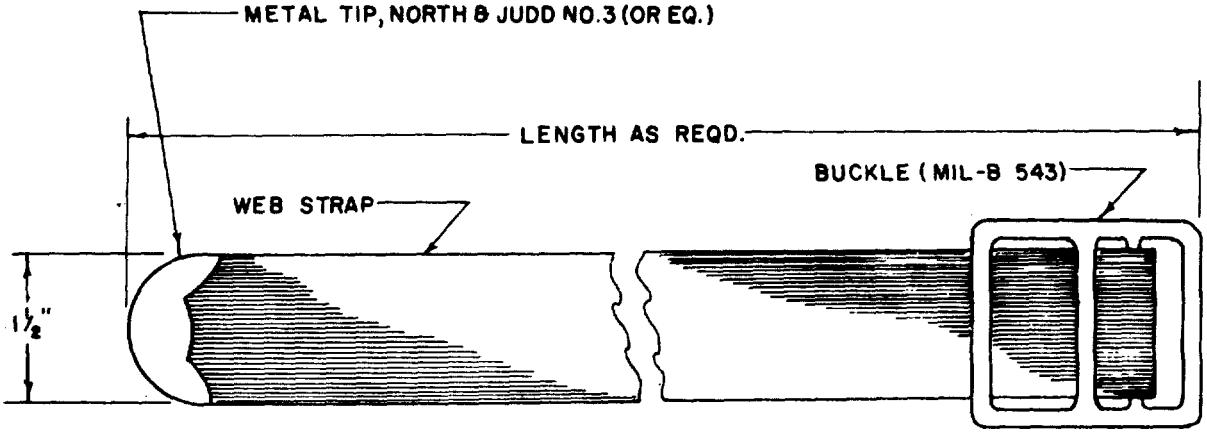


Figure 35. Tiedown strap, continuous type.

n. Chain Guard Railing. Refer to TM 92330-23814. The chain guard railing is installed on the outer edges of the folding shop doors when doors are in the down position. Installation of the chain guard railing is shown in figure 32.

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

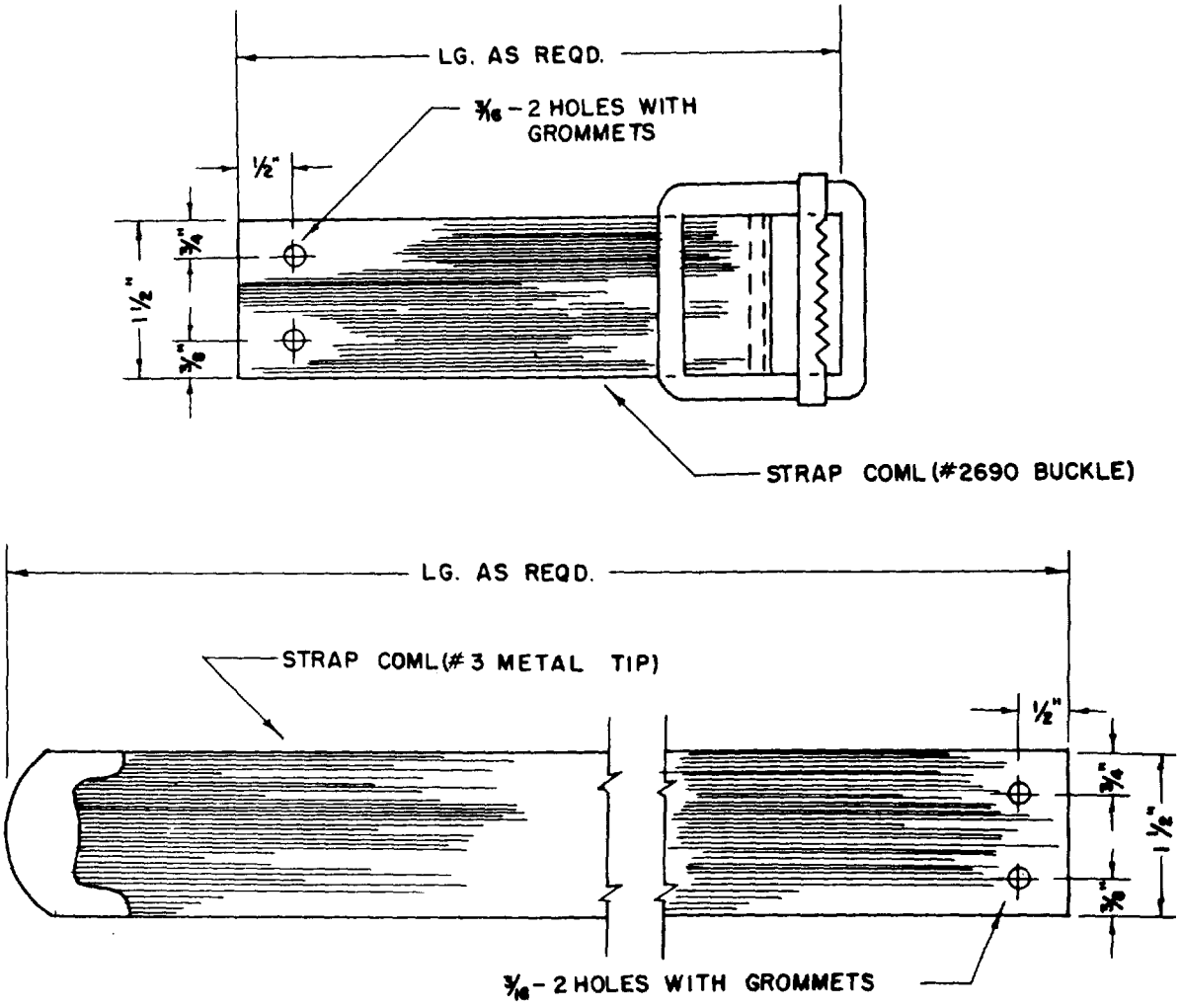


Figure 36. Strap, bolted type.

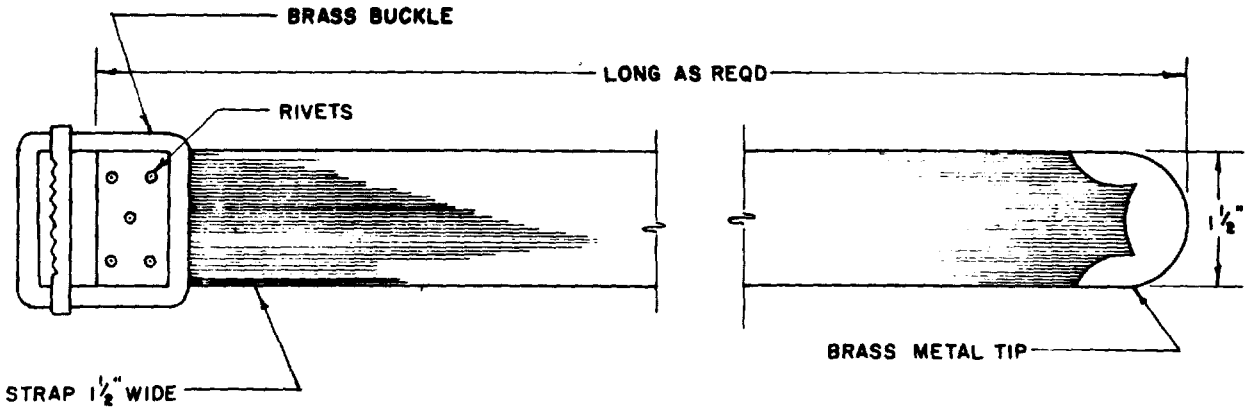


Figure 37. Strap, riveted type.

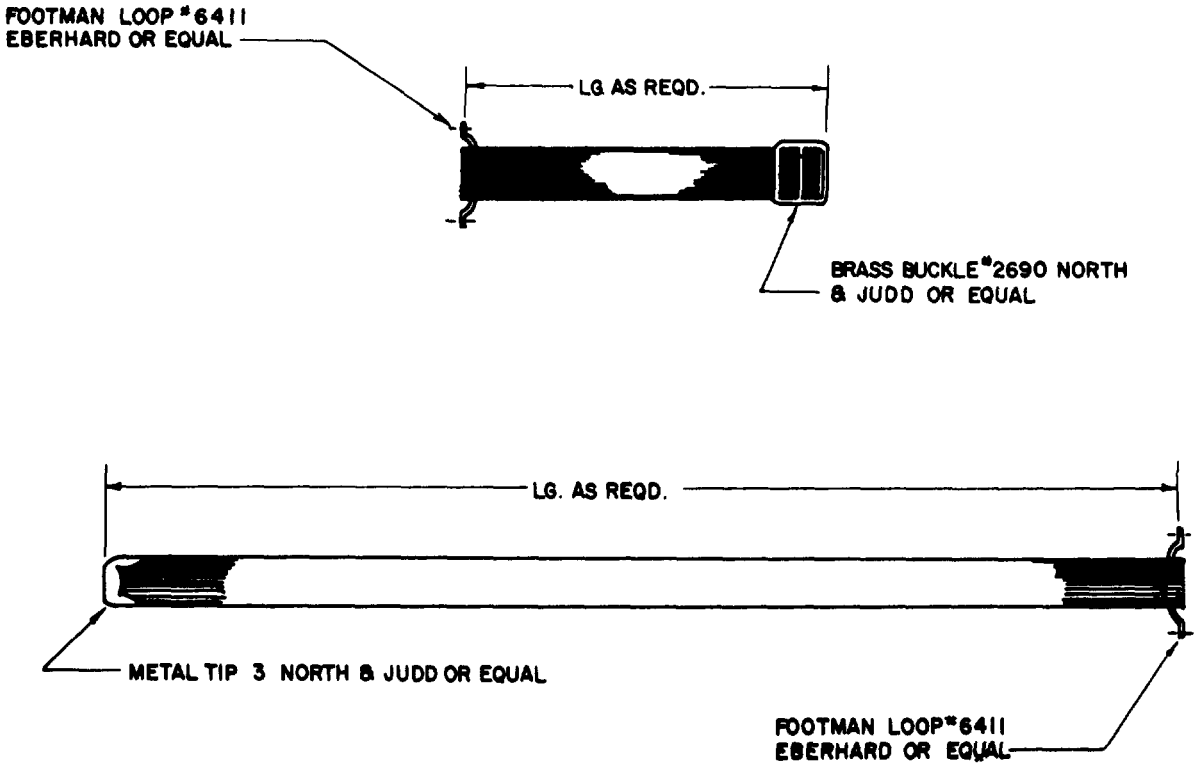


Figure 38. Strap, sewn type.

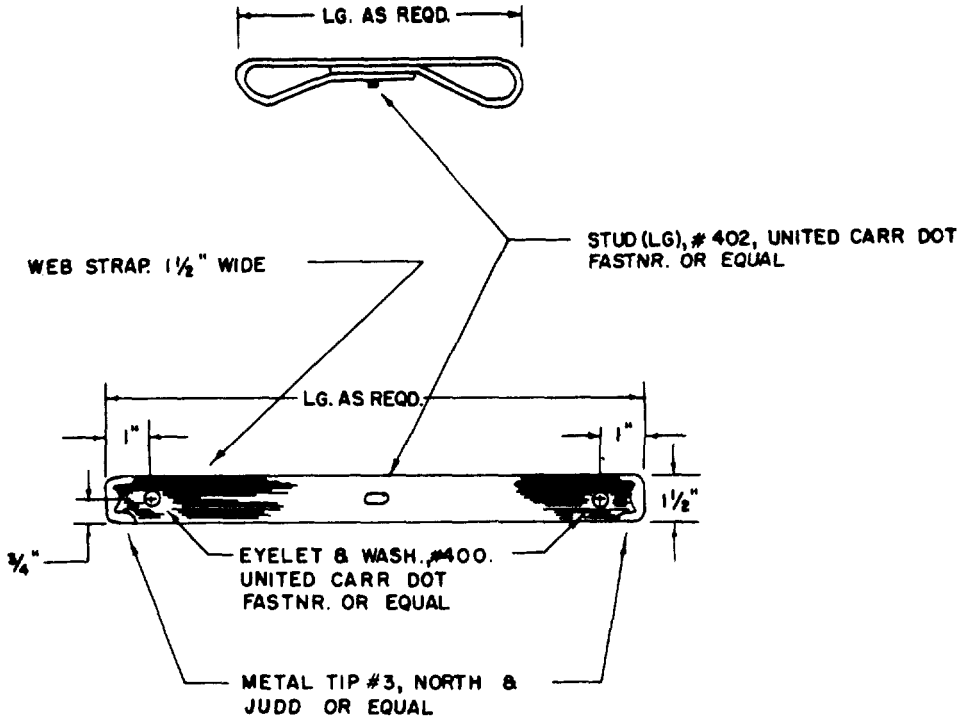


Figure 39. Strap, loop type.

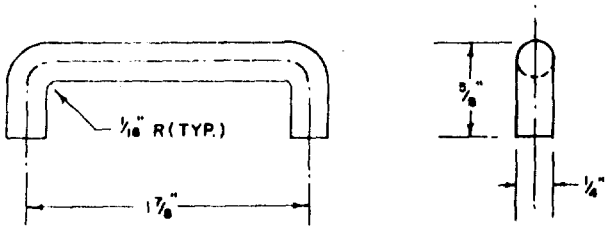


Figure 40. Steel strap loop.

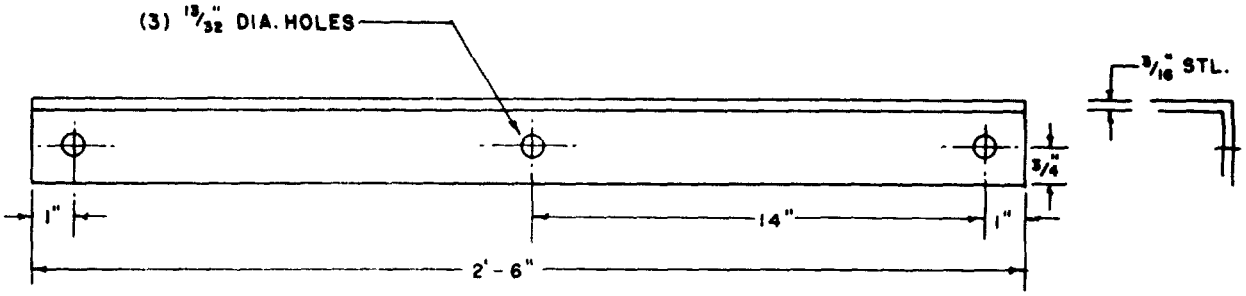


Figure 41. Mounting hinge.

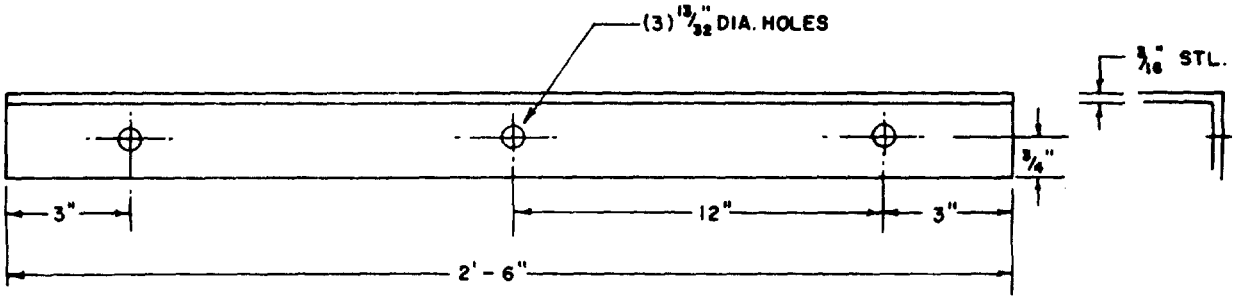


Figure 42. Mounting angle.

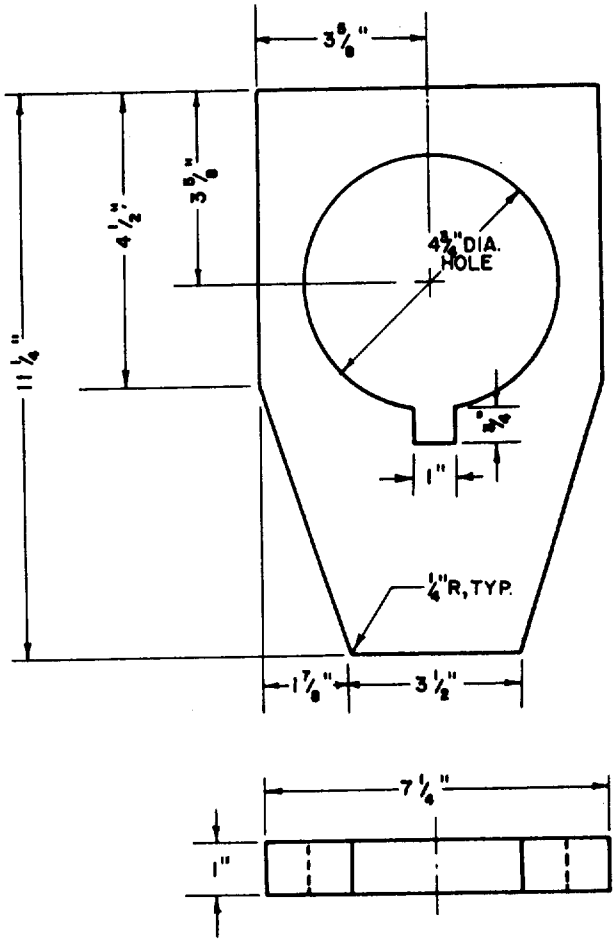


Figure 43. Ultraviolet light wood holder.

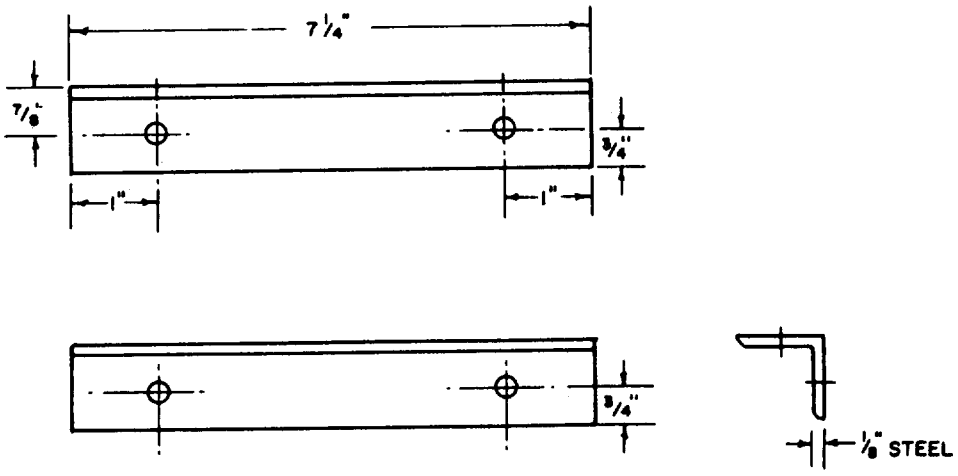


Figure 44. Light holder bracket.

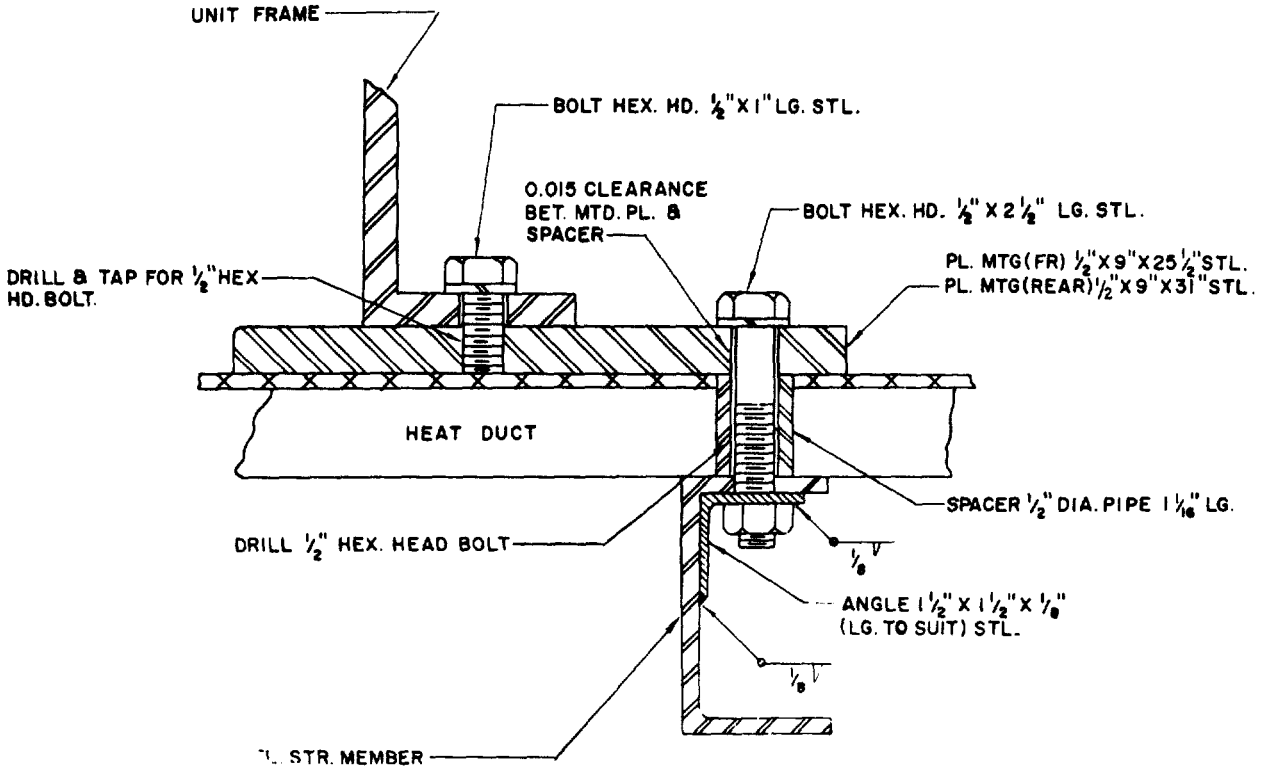


Figure 45. Inspection plate mounting.

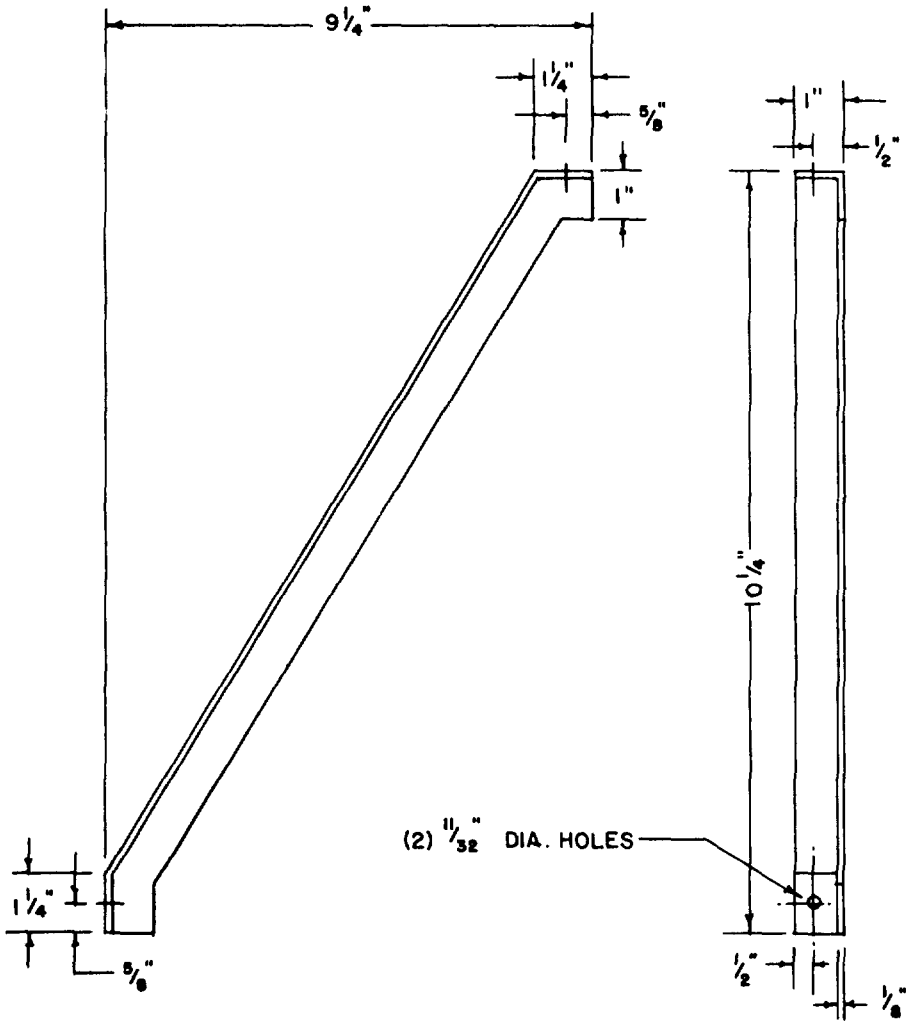


Figure 46. Light holder steel bracket.

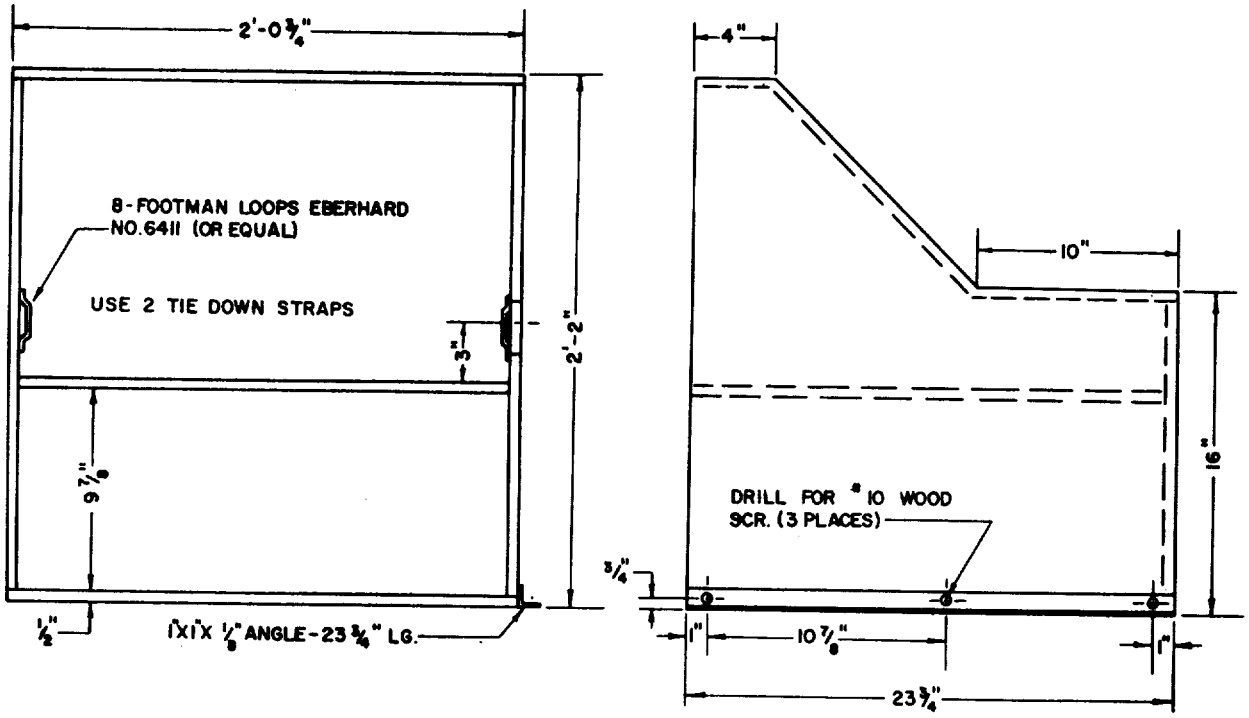


Figure 47. Storage cabinet l/t-inch plywood

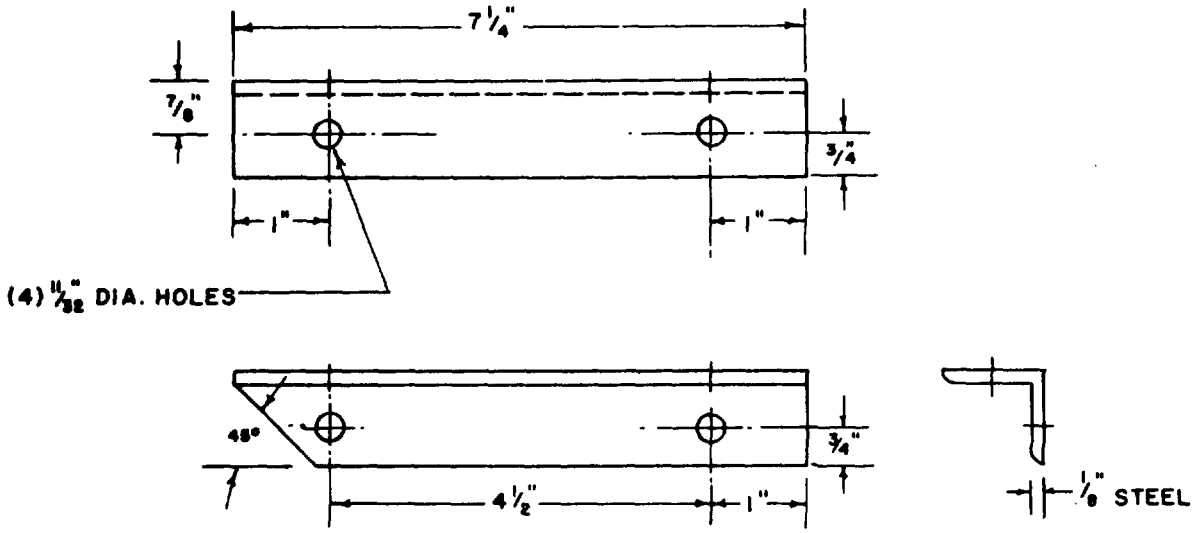


Figure 48. Light holder bracket, angle.

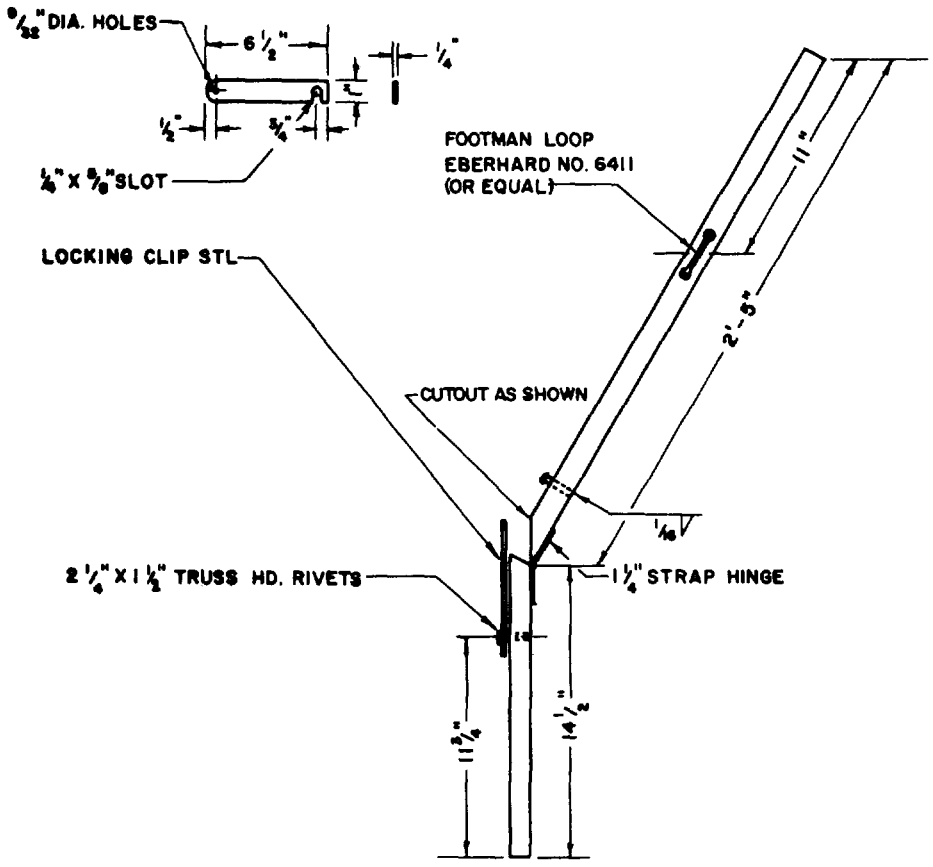


Figure 49. Modified hood frame.

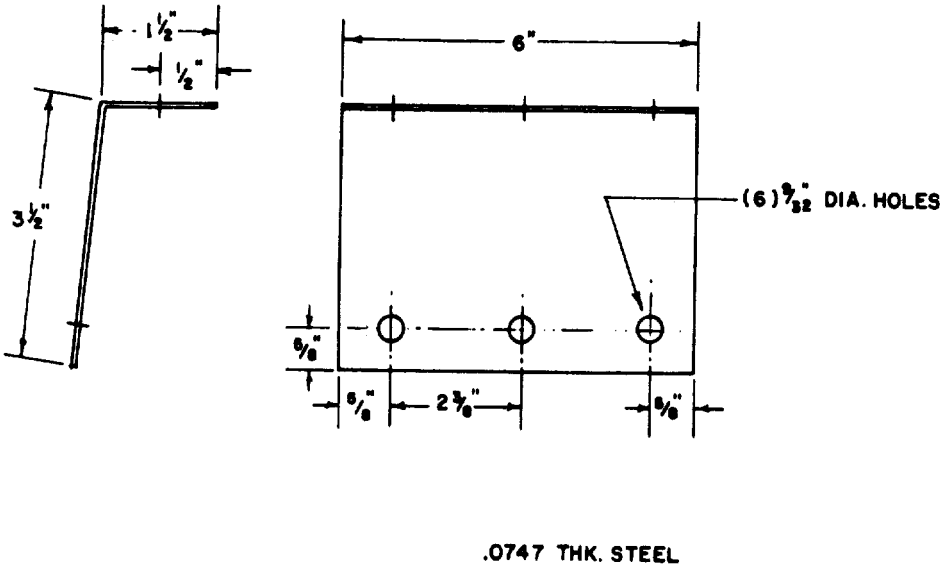


Figure 60. Hood frame mounting bracket.

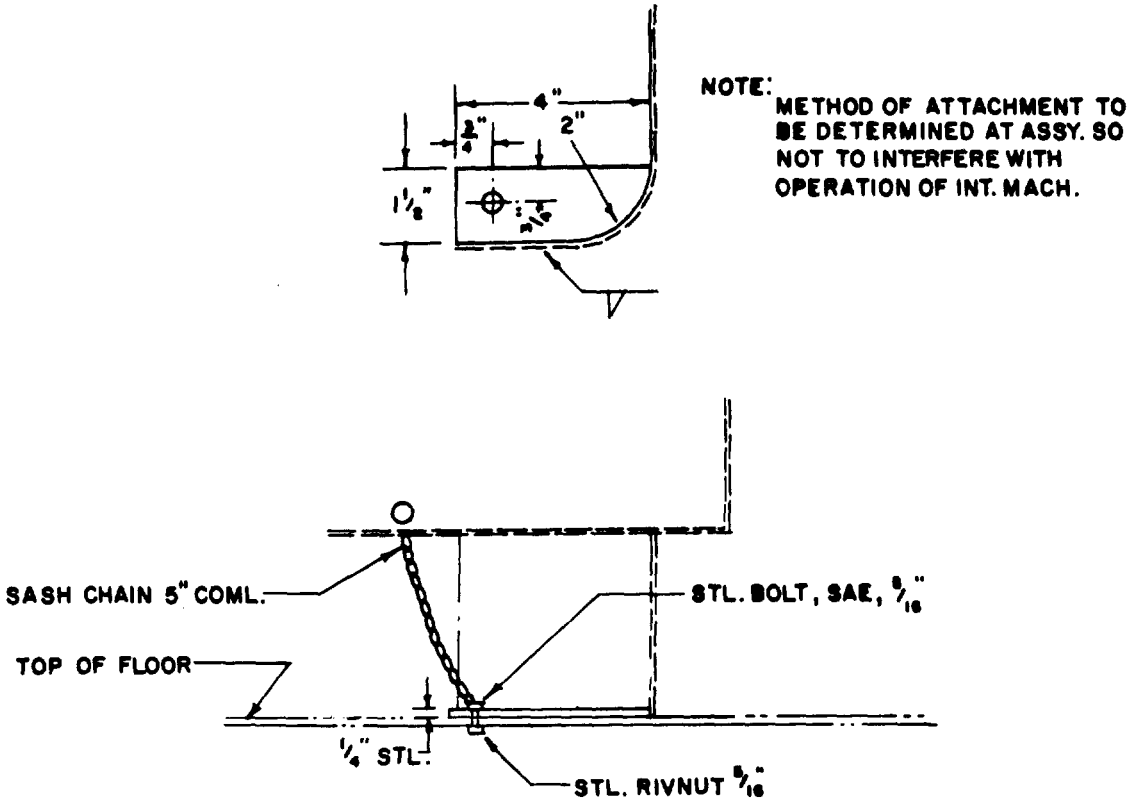


Figure 51. Magnetic inspection kit mounting plate.

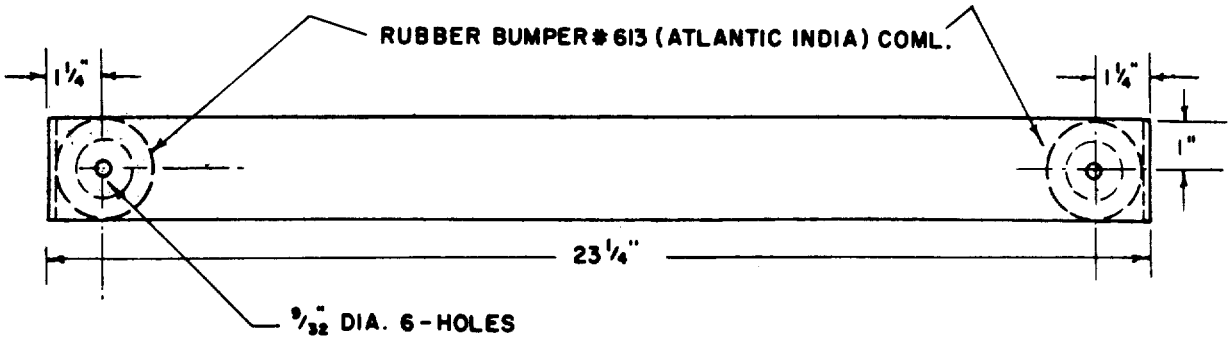


Figure 52. Magnetic inspection kit mounting bracket, top view.

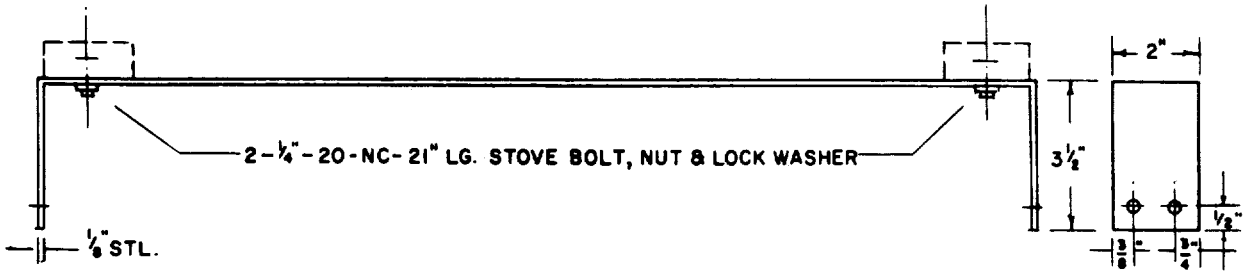


Figure 53. Magnetic inspection kit mounting bracket, side view.

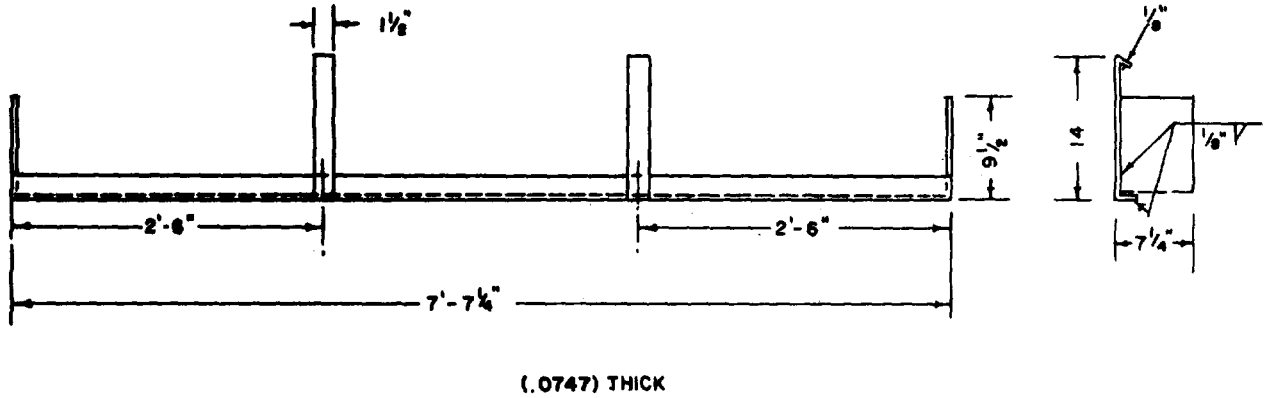


Figure 54. Can storage rack, steel.

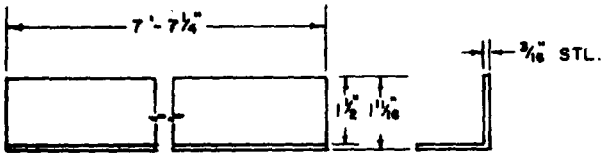


Figure 55. Can storage angle.

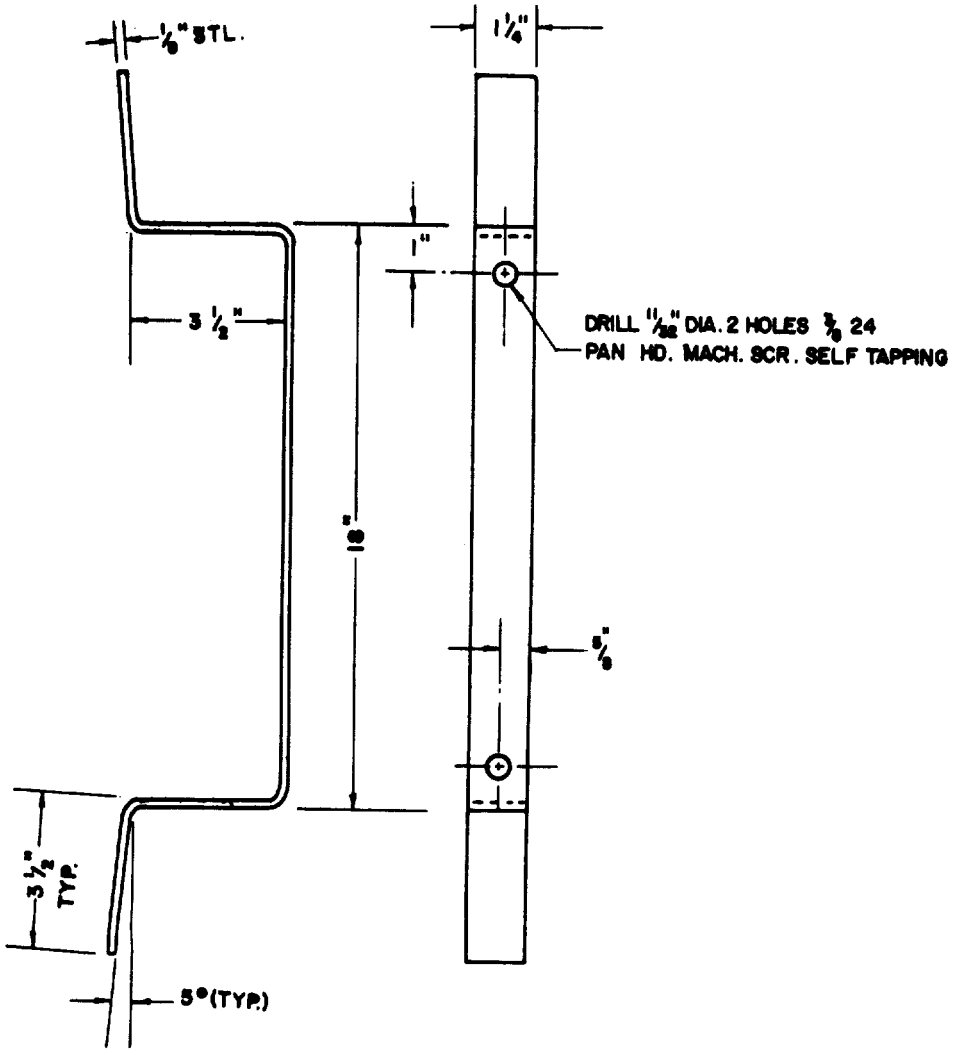


Figure 56. Hose rack.

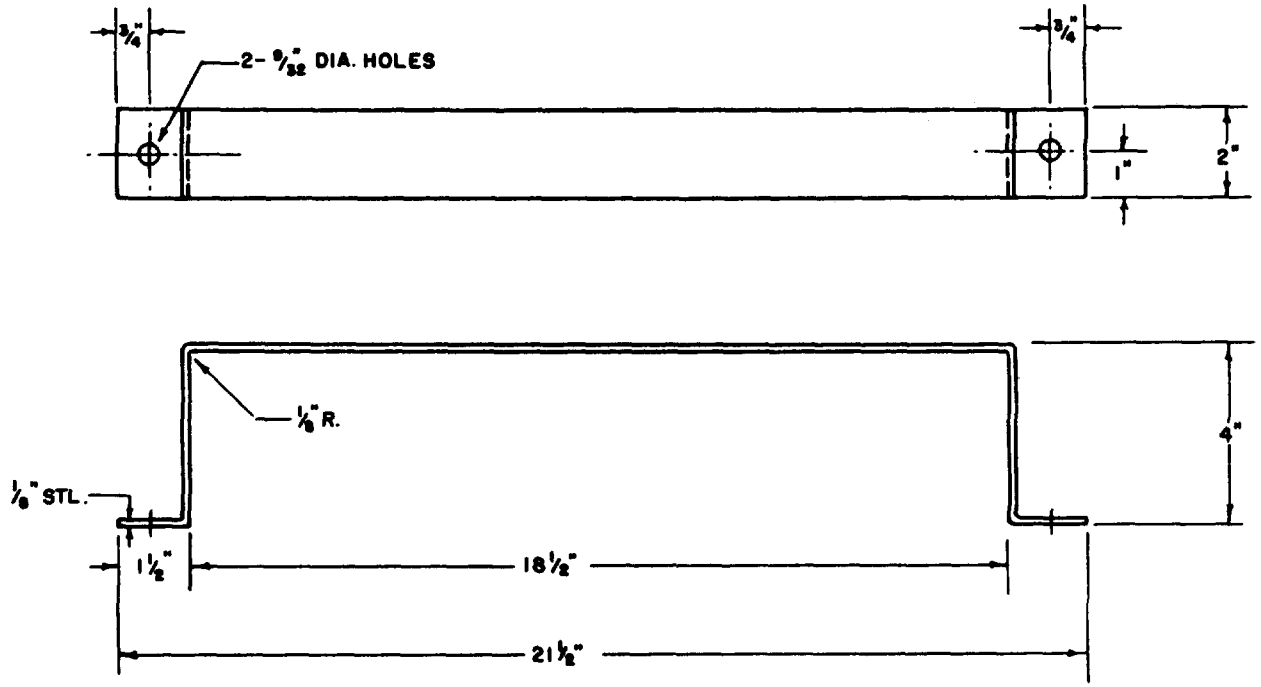


Figure 57. Portable grinder storage bracket.

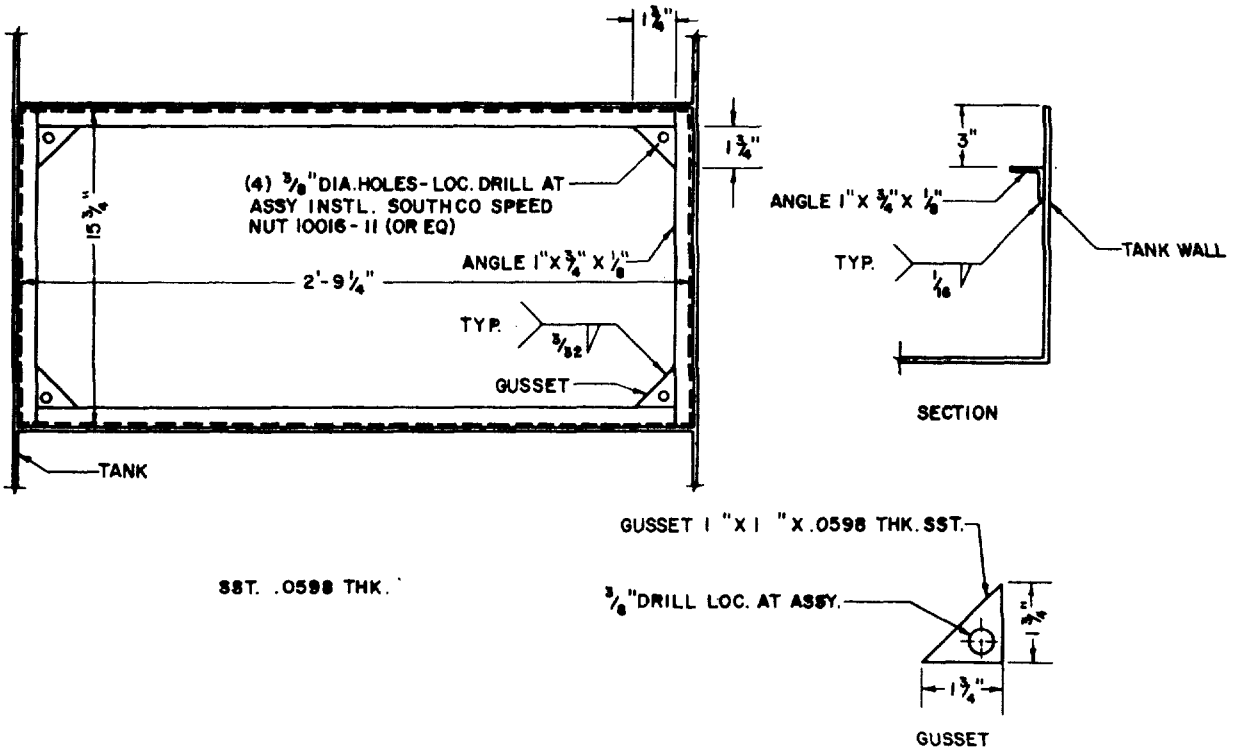


Figure 58. Tank and seal adapter.

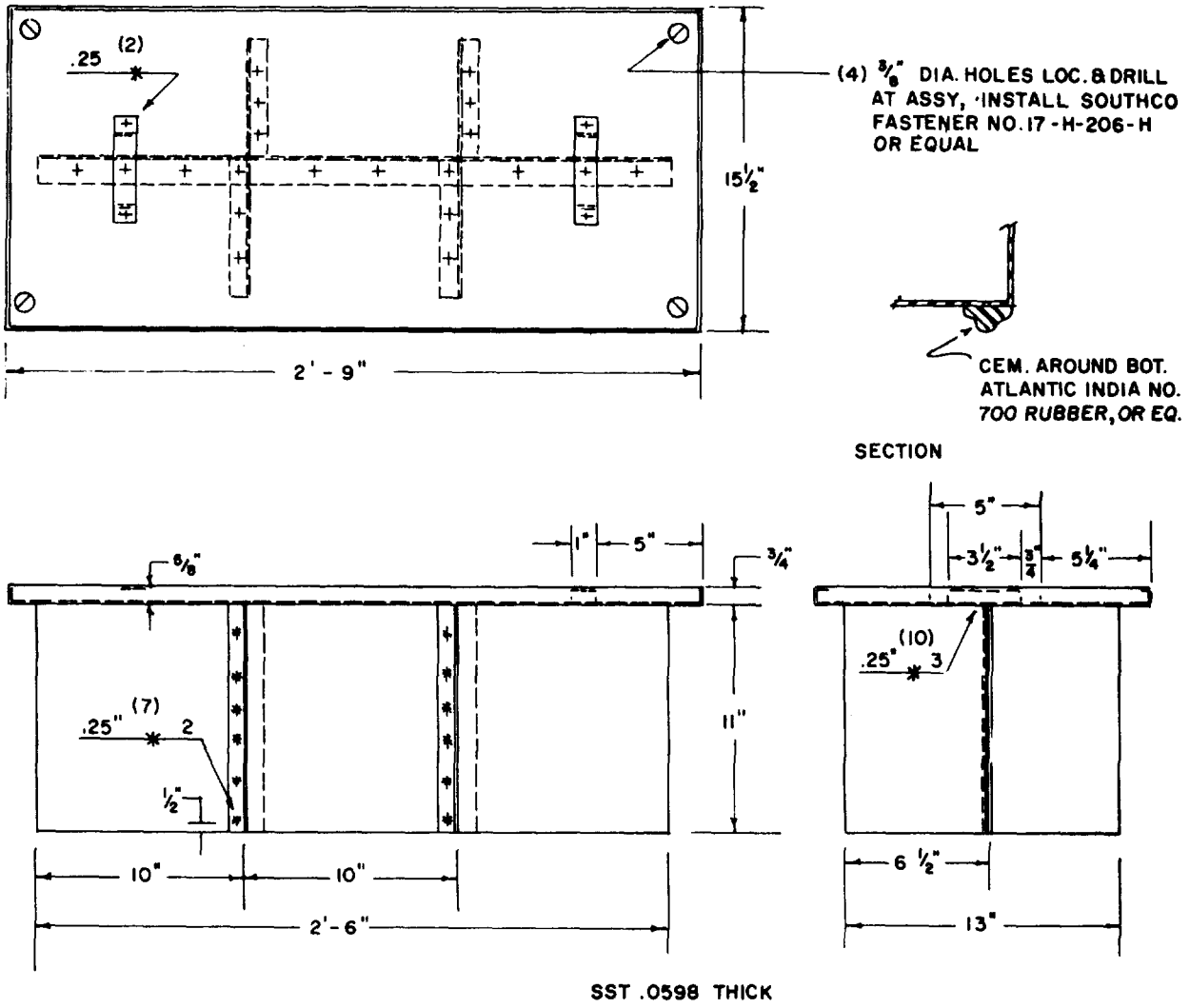
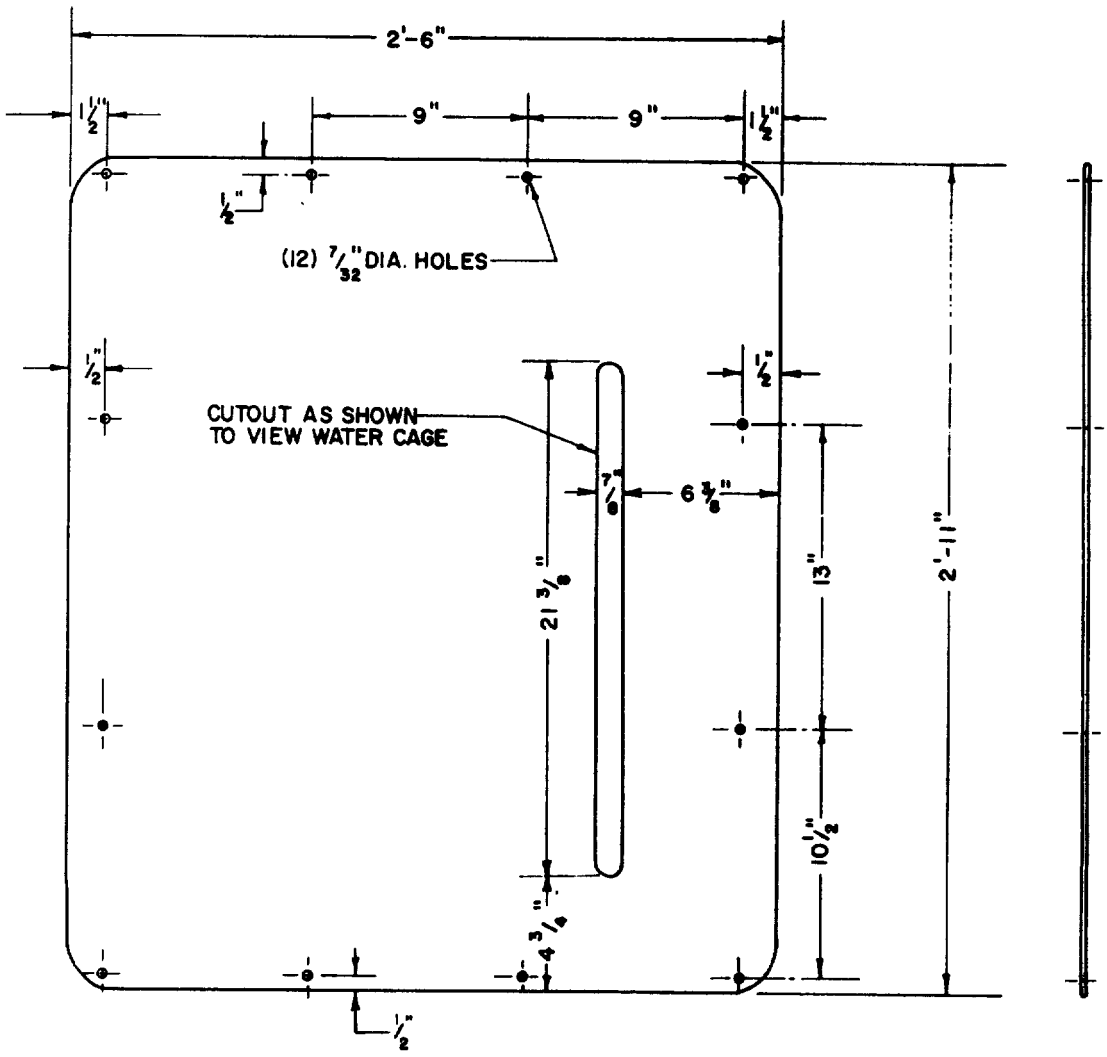


Figure 59. Tank cover and baffles.



STEEL (.049) THK.

Figure 60. Tank cover, side.

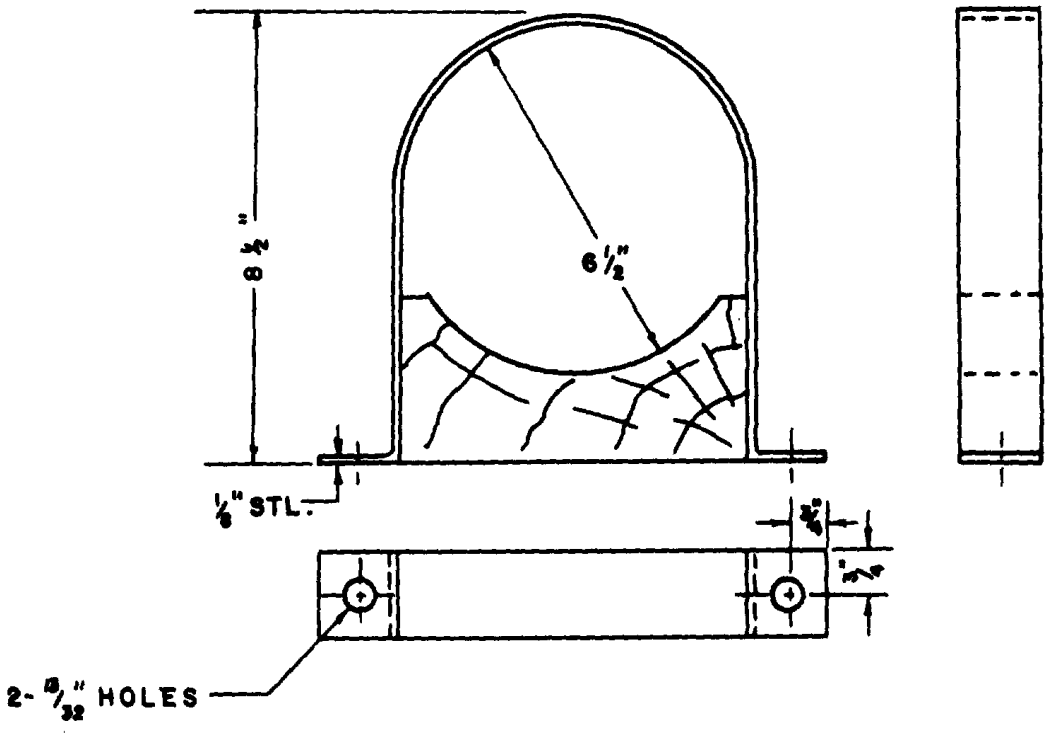


Figure 61. Water pump bracket.

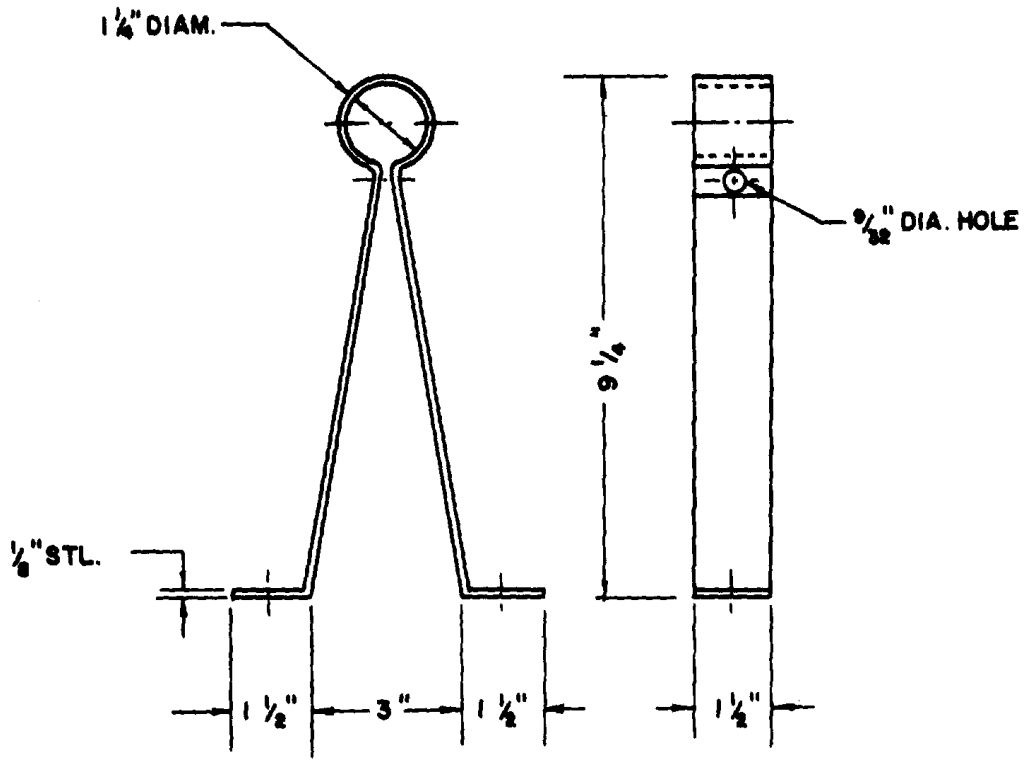


Figure 62. Drain pipe bracket.

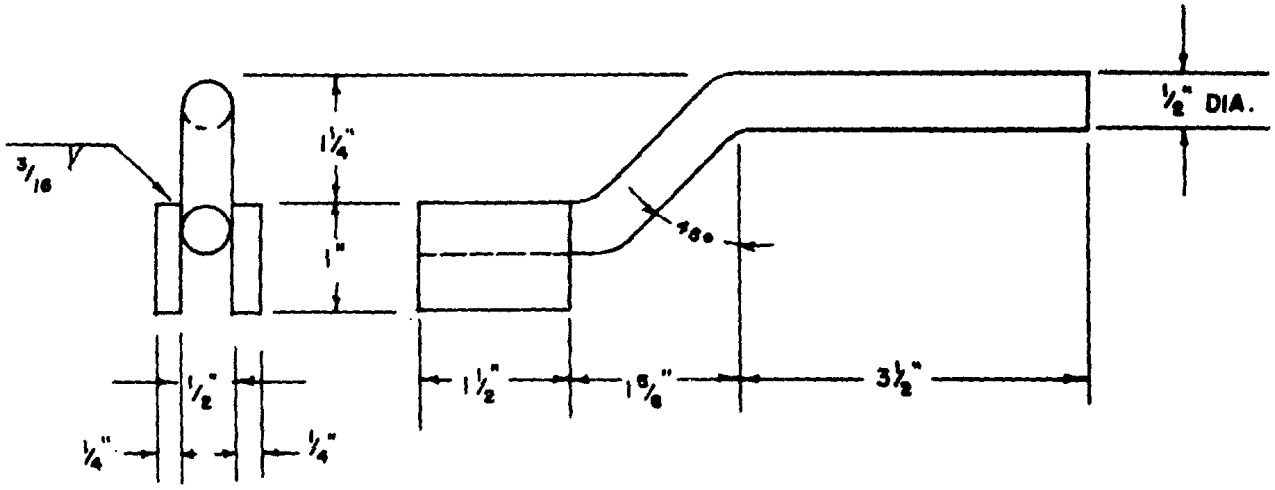


Figure 63. "Tee" valve handle.

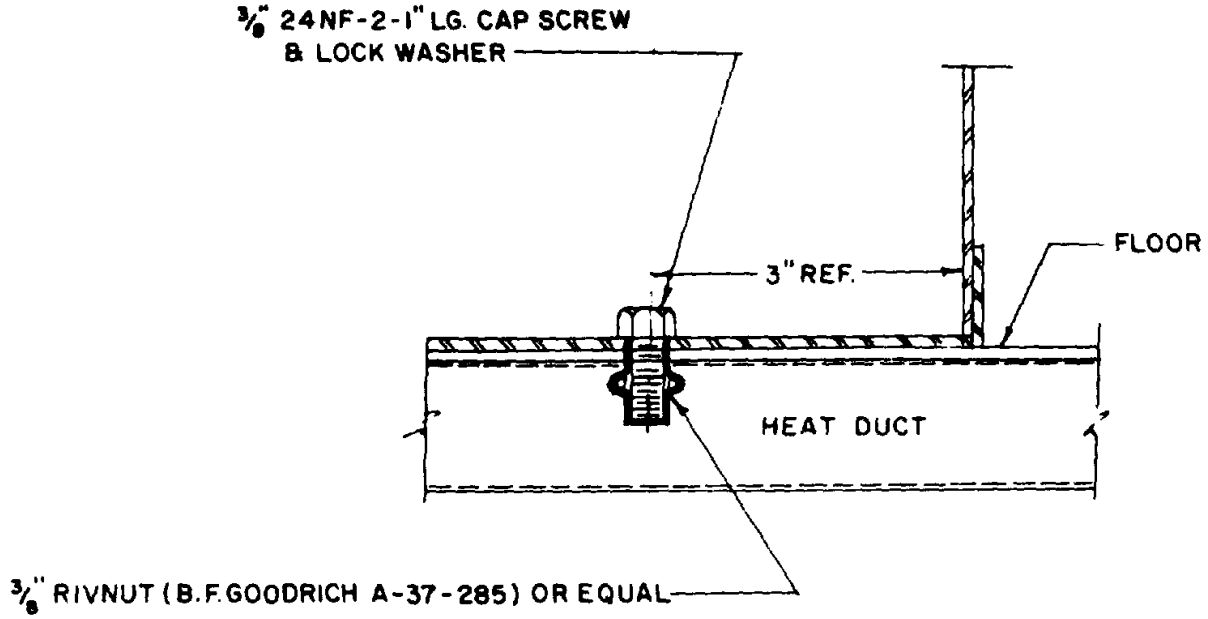


Figure 64. Cabinet mounting, floor.

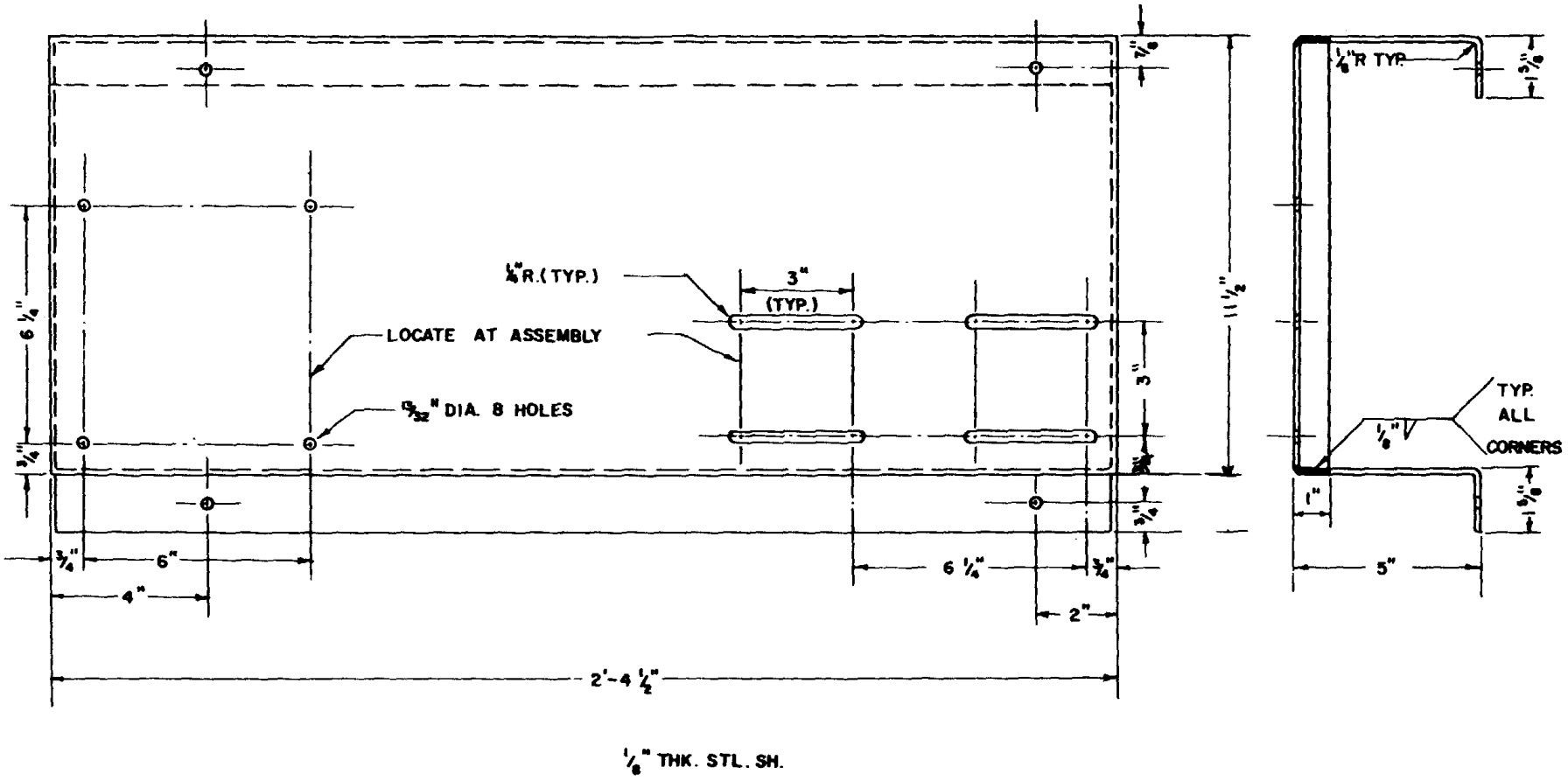


Figure 65. Details, compressor mounting.

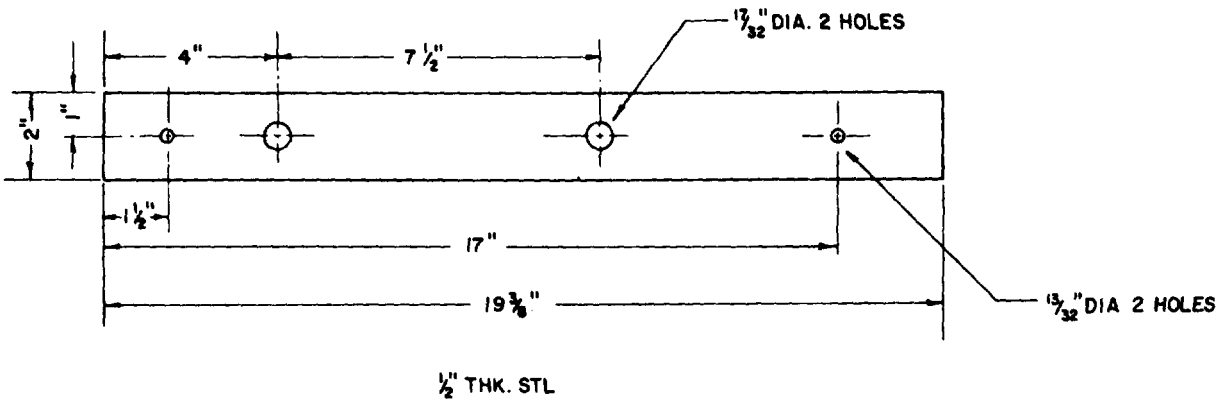


Figure 66. Mounting plate, compressor tank.

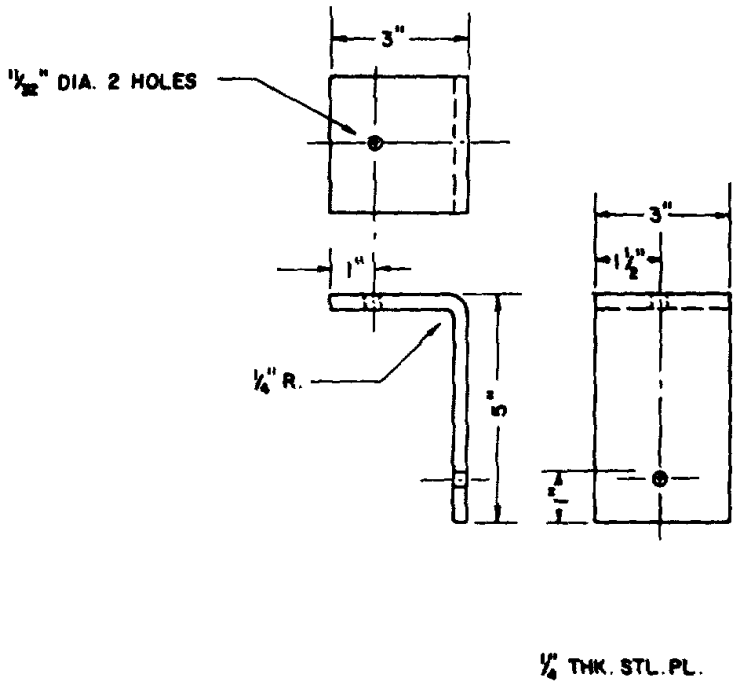


Figure 67. Mounting bracket, compressor tank.

Section II. CONTROLS AND INSTRUMENTS

150. 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.

151. Electric Controls and Instruments

Refer to paragraph 9.

152. Pneumatic Controls and Instruments

Refer to paragraph 10.

153. Water System Controls and Instruments

Refer to paragraph 11.

CHAPTER 9

MAINTENANCE INSTRUCTIONS (FIELD AND DEPOT MAINTENANCE)

Section I. SPECIAL FIELD AND DEPOT MAINTENANCE TOOLS AND EQUIPMENT

154. 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.

155. Replacement or Repair Parts

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

Section II. LUBRICATION

156. General

Lubrication instructions for the shop set are contained in the lubrication order which is a part of the technical manual for the item of paragraphs 30, 31, 97, and 98.

157. Special Lubrication Instructions

Refer to paragraphs 19 through 27 and 87 through 94 for special lubrication requirements under unusual conditions.

Section III. PREVENTIVE MAINTENANCE SERVICE

158. General

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

159. Preventive Maintenance Services at Time of Major Repairs

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

Section IV. TROUBLESHOOTING

160. 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.

161. 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 paragraphs 162 through 172.

162. 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 connections-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; position leads (fig. 4.)

163. Electrical Equipment Stops During Operation

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

164. 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.

165. Pneumatic Equipment Operates at Slow or Reduced Speed

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

166. Pneumatic Equipment Stops During Operation

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

167. Pneumatic Equipment Will Not Start

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

168. Water System Equipment Operates at Slow or Reduced Speed

Probable cause	*Possible remedy*
Water line or hose clogged.	Clean water line or hose.
Leaking water line or hose.	Repair leak.
Pump not functioning correctly.	Repair pump in accordance with technical manual for the item.
Valves partially closed.	Position valves correctly.

169. Water System Equipment Stops During Operation

Probable cause	*Possible remedy*
Pump or external water source off.	Repair equipment as necessary.
Broken water line or hose.	Replace damaged line or hose.

170. Water System Equipment Will Not Start

Probable cause	*Possible remedy*
Pump not receiving electrical current.	Check electrical system; repair or replace inoperative components.
Inlet valves closed.	Check system (fig. 20); reposition valves.

171. Excessive Vibration of Equipment

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

172. Excessive Noise

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

Section V. ELECTRICAL SYSTEM

173. General

Refer to paragraphs 116 through 120 for detailed description of the electrical system.

174. Electrical System, Electrically Driven Air Compressor

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

175. 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 160 through 172 for procedures. Detailed description of electrical wiring system is listed in paragraphs 116 through 120.

176. Electrical Switches and Circuit Breakers

Refer to paragraphs 719 for description of circuit breakers and switches. Field and depot maintenance personnel maintenance responsibilities consist of testing, or replacing switches and circuit breakers in accordance with appendix II. Refer to paragraphs 160 through 172 for procedures.

177. Lighting System

Refer to paragraphs 49 through 51 for description of lighting system. Field and depot maintenance responsibilities consist of testing, or replacing defective components of lighting system in accordance with appendix II.

Section VI. PNEUMATIC SYSTEM

178. General

A description of the pneumatic system is contained in paragraphs 52 through 56.

179. Air Compressor

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

180. Air Supply Tank

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

181. Lines and Hoses

Field and depot maintenance of air lines and hose consists of mounting, testing, repair and replacement (pars. 160-172).

182. Controls and Instruments

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

Section VII. WATER SYSTEM

183. General

Field and depot maintenance responsibilities for the water system will consist of inspection test, repair, or replacement of parts. Refer to paragraphs 126 through 129 for description of the system.

184. Inspecting, Testing, Repairing, or Replacement

Inspect, test, repair, or replace parts of the tank, lines, hose, tubing, fittings, controls and instruments as authorized in appendix II.

Section VIII. UTILITY SYSTEM

185. General

Field and depot maintenance responsibilities for the utility system consist of inspection, repair and replacement of parts.

186. Repair and Replacement

Repair or replace parts of the utility system in accordance with appendix II.

Table I. Operator Daily Service

Intervals				Procedures
Before Operation	During Operation	At halt	After Operation	
X	**X**	**X**	X	USUAL CONDITIONS *Visual inspection of equipment.* Inspect for condition, security and wear. *Cleaning of equipment.* Wipe dirt, oil, rust, corrosion, and debris from equipment. Refer to paragraph 34 for cleaning instructions.

Table I. Operator Daily Service-Continued.

Intervals				Procedures
Before Operation	During Operation	At halt	After Operation	
				USUAL CONDITIONS-CONTINUED
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 paragraph 80 and 3L.
				UNUSUAL CONDITIONS
X	X	X	X	*Extreme cold* (pars. 20 and 21).
X	X	X	X	*Extreme heat* (par. 22).
X	--	X	X	*Extreme wet* (par. 23).
X	X	X	X	*Snow and ice* (par. 24).
X	--	X	X	*Salt water* (par. 255.
X	--	X	X	*Dust* (par. 26).
X	X	X	X	*High altitude* (par. 27).

Table II. Preventive Maintenance Services

Item inspected	Intervals Inspect for -	Services required	Weekly	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

Table II. Preventive Maintenance Services-Continued

Item inspected	Services for -	Intervals Inspect required	Weekly	Monthly
Wiring and power cords continued	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	
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 sections.	--	X
Quick disconnect fittings.	Leaks	Replace seals, seats, or fittings, as necessary.	X	
	Ease of operation.	Replace plugs	--	X
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
Pump	Operation and function.	In accordance with technical manual for pump.	X	
Lines, hose, and tubing.	Leaks	Tighten or replace fittings, hose, or lines.	X	
	Security	Tighten mounting clamps or install new clamps.	--	X

Table II. Preventive Maintenance Service-Continued

Item inspected	Intervals Inspect for -	Services required	Weekly	Monthly
Lines, hose and tubing continued	Damage	Repair or replace damaged sections.	--	X
Tank seal	Leaks	Replace seals as necessary.	X	
Tank Cover	Leaks	Realine, tighten or adjust.	--	X
Controls	Sticking and binding.	Lubricate, repair or replace as necessary.	X	
	Leaks	Replace packing rings.	X	
	Damage	Repair or replace as necessary.	X	
	Cracked dial covers.	Replace	X	
Instruments	Accuracy	Remove for repair or calibration.	X	
	Damage	Repair or replace as necessary.	--	X
Storage cabinet drawers.	Sticking, binding, and distortion.	Lubricate (pars. 97 and 98), aline or straighten as necessary.	--	X
Storage cabinet hinge points.	Alinement, ease of operation, and condition.	Aline hinges, lubricate (pars. 97 and 98), or replace as necessary.	--	X
Storage cabinet exteriors.	Corrosion, rust chipped, or peeling paint.	Remove corrosion and rust (pars. 80 and 81), touchup or repaint as necessary.	--	X
Storage cabinet locking devices.	Security, ease of operation, and alinement.	Tighten bolts, realine, reposition, or replace as necessary.	--	X

APPENDIX I
REFERENCES

1. Dictionaries of Terms and Abbreviations.

AR 310-25 Dictionary of United States Army Terms
AR 310-50 Authorized Abbreviations and Brevity Codes

2. Publication Indexes.

DA PAM 25-30 Consolidated Index of Army Publications and Blank Forms

3. Logistics and Storage.

TM 740-90-1 Administrative Storage of Equipment
TM 743-200-1 Storage and Materiel Handling
SC 4920-99-CL-A37..... The Supply Catalog for Semitrailer Mounted Set C-3.

4. Maintenance of Supplies and Equipment.

AR 750-1 Army Materiel Maintenance Concepts and Policies
TM 9-2330-238-24P ..... Organizational and Field Maintenance Repair Parts and Special Tools List for Semitrailer, Van.
TM 43-0139 Painting Operations Instructions for Field Use
TM 55-1500-204-25/1..... General Aircraft Maintenance Manual

5. Other Publications.

AR 420-90 Fire Prevention and Protection
AR 55-38 Reporting of Transportation Discrepancies in Shipments
AR 700-58 Packaging Improvement Report
DA PAM 310-13 Military Publications Posting and Filing
DA PAM 738-751 Functional Users' Manual for the Army Maintenance Management Systems - Aviation (TAMMS-A)
FM-21-11 First Aid for Soldiers
MIL-W-8604A Welding, Fusion, Aluminum Alloy Process and Performance
TC 11-6 Grounding Techniques
TB 43-180 Calibration Requirements for the Maintenance of Army Materiel
TM 750-244-1-4 Procedures for the Destruction of Aviation Ground Support Equipment (FSC 4920) to Prevent Enemy Use

APPENDIX II
MAINTENANCE ALLOCATION

1. Purpose

The purpose of this maintenance allocation chart is to provide all activities with a description of maintenance functions to be performed at each echelon of maintenance.

2. Definitions or Terms

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

b. Adjust. To regulate periodically to prevent malfunction.

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

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

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

f. Repair. To restore to a serviceable condition by replacing 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 alignment.

Maintenance Allocation Chart

Components related operations	1st echelon	2 nd echelon	3rd echelon	4th echelon	5th echelon	Remarks
ELECTRICAL:						
CIRCUIT BREAKERS:						
Service	X					
Adjust	X					
Inspect	X					
Test	--	X				
Replace	--	--	X*			
Repair	--	--	--	X		
Rebuild	--	--	--	--	X	
WIRING:						
Service	X					
Test	--	X	--	--	--	
Inspect	X					
Replace	--	--	X*			
Repair	--	--	X			
Rebuild					X	Asterisk indicates only those items requiring minor dis-assembly.
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	

BY ORDER OF THE SECRETARY OF THE ARMY:

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The Metric System and Equivalents

Linear Measure

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

Weights

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

Liquid Measure

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

Square Measure

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

Cubic Measure

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

Approximate Conversion Factors

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

Temperature (Exact)

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

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