SUPERSEDES TB 9-3470-201-30/1 DATED 18 JULY 1960

# DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

## SHOP EQUIPMENT, MACHINE SHOP

## FIELD MAINTENANCE

## (NSN 3470-00-754-0738)

## INSTALLATION IN ONE M146 SEMITRAILER SHOP VAN



HEADQUARTERS, DEPARTMENT OF THE ARMY

16 OCTOBER 1987

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WASHINGTON, DC, 16 October 1987

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You can help improve this bulletin. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to: Commander, US Army Armament, Munitions and Chemical Command, ATTN: AMSMC-MAS (R), Rock Island, IL 61299-6000. A reply will be furnished to you.

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*This bulletin supersedes TB 9-3470-201-30/1, dated 18 July 1960.

LIST OF ILLUSTRATIONS

WARNING

Improper hook-up of Generator Sets AN/MJQ-16 and 18 may result in a safety hazard to personnel and may damage equipment.

How to hook up AN/MJQ-16 and 18 Generator Sets requiring single phase 120 volts power.

1. Power selector switch on generator must be set to 120 Vac single phase position.

2. Connect shelter cable green wire to mechanical ground on metal trailer chassis.

3. Connect black wire to terminal L1 (AC hot) and white wire to L3 (AC neutral).

4. Connect L3 to the mechanical ground connection with 8 AWG jumper.

1. General

a. The instructions contained in this bulletin are to be used as advice and guidance for installation of shop equipment, machine shop, field maintenance (NSN 3470-00-754-0738) in one M146 semitrailer shop van.

b. Slight variations to the installation instructions may be made at the discretion of the officer in charge.

c. Complete lists of items contained in this shop are found in SC 3470-95-CL-A15.

d. Personnel performing this installation should have a practical knowledge of electricity.

e. Items not mentioned in this bulletin, that may be components of this shop, may be stowed in storage cabinets and drawers or secured in such a manner as to avoid damage in transit.

f. All dimensions, fastener sizes, and hardware sizes are in inches.

g. When entering shop, curbside is at right and roadside is at left.

h. The 10-kw generator is mounted in the semitrailer for transportation only and is to be removed before operation.

2. Warnings and Cautions

WARNING

All electrically-powered tools and equipment must be grounded prior to use. Mount all electrically-powered machinery to the chassis of the vehicle as a safety precaution against electrical shock to the operator.

Drill bits can fracture or break during use. Wear safety glasses at all times when drilling holes.

Improper hook-up of Generator Sets AN/MJQ-15 and 18 may result in a safety hazard to personnel and may damage equipment.

CAUTION

Do not drill holes through cross members or into frame of semitrailer. If necessary, move the item to be mounted slightly so that drilled holes will avoid these structures.

Special care should be exercised to avoid damage to electrical. collectors, wiring, or electrical equipment.

To preserve its waterproof characteristics, precautions should be taken not to puncture the outer skin when drilling holes into the walls or floor of the shop. Coat underside of semitrailer body with coating compound (UNDERCOATING TT-G-520) where mounting hardware projects through floor.

3. Location of Equipment

a. Location of equipment installed or stowed in shop van is shown in figures 1, 6, and 8.

(1) Refer to table 1 for hardware required for installation.

(2) Refer to table 2 for components to be mourted.

(3) Refer to table 3 for electrical components to be mounted.

b. Refer to table 4 for standard conversion chart.

3. Location of Equipment--Continued

Table 1. Mounting Hardware

| MS/part no. | Size and description | Qty | Application |
|---|---|---|---|
| AN970-5 | 5/16-in. Flat Washer | 12 | Storage cabinets |
| AN970-6 | 3/8-in. Flat Washer | 4 | Upright drilling machine |
| AN970-8 | 1/2-in. Flat Washer | 11 | Drill grinding machine, utility grinding machine, machinist's vise |
| AN970-10 | 5/8-in. Flat Washer | 4 | Gasoline engine generator set |
| S37B80 | #10 Blind Rivet Nut | 8 | Strap loops |
| MS27183-6 | 5/32-in. Flat Washer | 8 | Strap loops |
| MS27183-12 | 11/32-in. Flat Washer | 16 | Lathe accessory case, storage cabinets |
| MS27183-14 | 13/32-in. Flat Washer | 20 | Engine lathe, storage cabinet walls, upright drilling machine |
| MS27183-18 | 17/32-in. Flat Washer | 11 | Drill grinding machine, machinist's vise, utility grinding machine |
| MS27183-21 | 21/32-in. Flat Washer | 4 | Gasoline engine generator set |
| MS35190-272 | #10-24 UNC-2A Countersunk Head Machine Screw x 5/8 L | 12 | Strap loops |
| MS35191-276 | #10-32UNF Countersunk Head Machine Screw x 1 L | 8 | Strap loops |
| MS35190-278 | #10-24 UNC-2A Countersunk Head Machine Screw x 1-3/4 L | 8 | Strap loops |
| MS35190-280 | #10-24 UNC-2A Countersunk Head Machine Screw x 2-1/4 L | 16 | Strap loops |

3. Location of Equipment--Continued

Table 1. Mounting Hardware--Continued

| MS/part no. | Size and description | Qty | Application |
|---|---|---|---|
| MS35338-43 | #10 (0.190) Lockwasher | 36 | Strap loops |
| MS35338-45 | 5/16-in. Lockwasher | 16 | Storage cabinets, lathe accessory case |
| MS35338-46 | 3/8-in. Lockwasher | 16 | Storage cabinet walls, engine lathe, upright drilling machine |
| MS35338-48 | 1/2-in. Lockwasher | 11 | Drill grinding machine, machinist's vise, utility grinding machine |
| MS35338-50 | 5/8-in. Lockwasher | 4 | Gasoline engine generator set |
| MS35650-302 | #10-32UNF Hex Nut | 36 | Strap loops |
| MS35751-84 | 3/8-16 UNC-2A Squareneck Bolt x 5-1/2 | 8 | Storage cabinets |
| MS51939-3 | Strap Loop | 22 | Walls, floors, storage cabinet top and walls |
| MS51967-5 | 5/16-in. UNC-2B Hex Nut | 16 | Lathe accessory case, storage cabinets |
| MS51967-8 | 3/8-in. UNC-2B Hex Nut | 24 | Engine lathe, upright drilling machine, storage cabinet walls |
| MS51967-14 | 1/2-in. UNC-2B Hex Nut | 11 | Drill grinding machine, utility grinding machine, machinist's vise |
| MS51967-20 | 5/8-in. UNC-2B Hex Nut | 4 | Gasoline engine generator set |
| MS90725-40 | 5/16-18 UNC-2B Machine Bolt x 2 L | 12 | Storage cabinets |
| MS90725-44 | 5/16-18 UNC-2B Machine Bolt x 3 L | 4 | Lathe accessory case |

3. Location of Equipment--Continued

Table 1. Mounting Hardware--Continued

| MS/part no. | Size and description | Qty | Application |
|---|---|---|---|
| MS90725-67 | 3/8-16 UNC-2B Hex Head Capscrew x 2-1/4 L | 4 | Upright drilling machine |
| MS90725-68 | 3/8-16 UNC-2B Hex Head Capscrew x 2-1/2 L | 4 | Engine lathe |
| MS90725-121 | 1/2-13 UNC-2B Hex Head Capscrew x 3-1/2 L | 11 | Utility grinding machine, drill grinding machine, machinist's vise |
| MS90725-166 | 5/8-11 UNC-2B Hex Head Capscrew x 2-1/2 L | 4 | Gasoline engine generator set |
| 7551848 | Plate | 4 | Storage cabinet walls |
| 7550588-3 | 48.00-in. Retaining Strap | 6 | Cable assemblies, extension lights, wash pan, portable tool box, surface plate, outside micrometer calipers, outside micrometer caliper sets |
| 7550588-5 | 24.00-in. Retaining Strap | 1 | 50-ft electrical power cable assembly |
| 7550588-6 | 12.00-in. Retaining Strap | 2 | Ground rod, pinch bar |
| 7550588-9 | 66.00-in. Retaining Strap | 3 | Surface plate, outside micrometer calipers, outside micrometer caliper set |

3. Location of Equipment--Continued

Table 2. Components to be Mounted

| NSN | Qty | Description | Figure no. |
|---|---|---|---|
| | 1 | ACCESSORY CASE, LATHE | 1 |
| 5120-00-224-1384 | 1 | BAR, PINCH | 1 |
| 7125-00-357-5337 | 3 | CABINET, STORAGE | 1 |
| 6150-00-682-3460 | 3 | CABLE ASSEMBLY, POWER, ELECTRICAL: 50 ft | 1 |
| 4910-00-725-9558 | 1 | CABLE ASSEMBLY, POWER, ELECTRICAL: 25 ft | 1 |
| 4910-00-800-1405 | 1 | CABLE ASSEMBLY, POWER, ELECTRICAL: 7 ft | 1 |
| 5210-00-555-8673 | 1 | CALIPER, MICROMETER, OUTSIDE: (in.) | 1 |
| 5210-00-555-8672 | 1 | CALIPER, MICROMETER, OUTSIDE (mm) | 1 |
| 5210-00-554-7134 | 1 | CALIPER SET, MICROMETER, OUTSIDE | 4 |
| 3413-00-964-9379 | 1 | DRILLING MACHINE, UPRIGHT | 1 |
| 6115-00-889-1447 | 1 | GENERATOR SET, GASOLINE ENGINE | 1 |
| 3415-00-517-1050 | 1 | GRINDING MACHINE, DRILL | 4 |
| 3460-00-243-9607 | 1 | GRINDING MACHINE, MACHINE TOOL ATTACHMENT | 1 |
| 3415-00-255-2683 | 1 | GRINDING MACHINE, UTILITY | 4 |
| 3416-00-725-3508 | 1 | LATHE, ENGINE | 1 |
| 6230-00-729-9259 | 2 | LIGHT, EXTENSION: 25 ft | 1 |
| 4940-00-795-3595 | 1 | PAN, WASH | 1 |
| 5220-00-293-3556 | 1 | PLATE, SURFACE | 4 |
| 5975-00-777-6781 | 1 | ROD, GROUND | 1 |
| 5140-00-319-5079 | 1 | TOOL BOX, PORTABLE | 1 |
| 3460-00-277-3504 | 1 | VISE, MACHINE TABLE | 1 |
| 5120-00-293-1439 | 1 | VISE, MACHINIST'S | 4 |

3. Location of Equipment--Continued

Table 3. Electrical Components to be Mounted

| Part No. or NSN | Qty | Description, (specification) | Figure No. |
|---|---|---|---|
| 5975-00-100-8721 | 5 | BOX CONNECTOR: 0.50-in (W-F-408) | 6 |
| 5975-00-100-8693 | 2 | BUSHING: 0.50-in. (W-F-408) | 6 |
| 5975-00-100-8670 | 2 | BUSHING: 0.75-in. (W-F-408) | 6 |
| 5975-00-100-8709 | 1 | BUSHING: 2.0-in. (W-F-408) | 6 |
| MS90725-6 | 1 | CAPSCREW, HEXAGON HEAD | 7 |
| 5925-00-415-2286 | 1 | CIRCUIT BREAKER: 2 Pole, 60 amp (W-C-375) | 11 |
| 5925-00-865-3389 | 2 | CIRCUIT BREAKER: 2 Pole, 50 amp (W-C-375) | 11 |
| 5925-00-998-7439 | 1 | CIRCUIT BREAKER: 3 Pole, 100 amp (W-C-375) | 11 |
| 5975-00-243-5447 | 10 | CLAMP BACK, CONDUIT (7551847) | 6-8 |
| 7551850-1 | 8 ft | CONDUIT. METAL: STEEL GALVANIZED Rigid - 0.50-in. (ANSI/UL 797) | 6-8-9 |
| 7551850-2 | 9 ft | CONDUIT, METAL: STEEL GALVANIZED Rigid - 0.50-in. (ANSI/UL 797) | 8-9 |
| 7551850-3 | 4 ft | CONDUIT, METAL: STEEL GALVANIZED Rigid - 0.50-in. (ANSI/UL 797) | 8-9 |
| 7551850-4 | 9 ft | CONDUIT, METAL: STEEL GALVANIZED Rigid - 0.50-in. (ANSI/UL 797) | 6-8-9 |
| 7551850-5 | 4 ft | CONDUIT, METAL: STEEL GALVANIZED Rigid - 0.50-in. (ANSI/UL 797) | 8-9 |
| 5975-00-178-1192 | As Req'd | CONDUIT, METAL: STEEL GALVANIZED flexible - 2.0-in. (ANSI/UL 797) | 6 |
| 5975-00-892-9874 | 1 | CONDUIT OUTLET: 2.0-in. (W-C-586) | 6 |
| 5975-00-141-0541 | 1 | COVER, SINGLE RECEPTACLE (W-J-800) | 8 |
| 5975-00-100-8714 | 2 | COUPLING, CONDUIT: 0.50-in. (W-F-408) | 8 |

3. Location of Equipment--Continued

Table 3. Electrical Components to be Mounted--Continued

| Part No. or NSN | Qty | Description, (specification) | Figure No. |
|---|---|---|---|
| 1495 | 1 | ELBOW, SERVICE ENTRANCE | 6-7 |
| 5340-01-198-2494 | 4 | EXPANSION SLEEVE, SCREW (FF-B-588) | 6 |
| 5340-01-280-6139 | 2 | FITTING, CONDUIT: 2.0-in. (W-F-408) | 6 |
| 5920-01-234-1320 | 2 | FUSE, CARTRIDGE: 30 amp (W-F-1726/7) | 6-11 |
| W-F-1726/7 | 2 | Size and style to fit switch boxes, fuse, cartridge: 50 amp (W-F-1726/7) | 11 |
| MS35489-94 | 1 | NON METAL GROMMET | 7 |
| 4SSLD-1/2 | 1 | JUNCTION BOX (W-F-800) | 8 |
| 5975-00-100-8775 | 4 | LOCKNUT: 0.50-in. (W-F-408) | 6 |
| 5975-00-100-8767 | 4 | LOCKNUT: 0.75-in. (W-F-408) | 6 |
| 5975-00-100-8776 | 4 | LOCKNUT: 2.0-in (W-F-408) | 6-7 |
| MS35335-33 | 3 | LOCKWASHER: 1/4-in. | 7 |
| 5975-00-058-2223 | 1 | NIPPLE: 0.50 X 5.00 (WW-C-581) | 6 |
| 5975-01-082-6642 | 1 | NIPPLE: 0.75 X 1.38 (WW-C-581) | 6 |
| 5975-00-057-6657 | 1 | NIPPLE: 2.00 X 4.00 (WW-C-581) | 6 |
| 5975-00-849-6702 | 1 | NIPPLE, CONDUIT: 2.00 X 2.00 (W-F-408) | 7 |
| MS51967-2 | 2 | PLAIN NUT, HEXAG | 7 |
| G1224ML3125 | 1 | PANEL, POWER DISTRIBUTION (W-P-115) | 6 |
| 5935-00-670-7895 | 1 | PLUG, POWER ENTRANCE (7551887) | 7-10-11 |
| MS35206-285 | 4 | MACHINE SCREW PAN HEAD | 6 |
| MS51861-49 | 20 | TAPPING SCREW: #10X1-in | 6-8 |
| MS51956-1 | 10 | RETAINING STRAP | 6-8 |
| SN321 | 1 | SWITCH BOX, (ENCLOSED): 30A/240VAC (W-S-865) | 8 |

3. Location of Equipment--Continued

Table 3. Electrical Components to be Mounted--Continued

| Part No. or NSN | Qty | Description, (specification) | Figure No. |
|---|---|---|---|
| SN322 | 1 | SWITCH BOX, (ENCLOSED): 60A/240VAC (W-S-865) | 6 |
| MS20659-141 | 1 | TERMINAL LUG | 7 |
| 6145-00-239-1330 | 125 ft | WIRE: (10AWG) (J-C-30) | 10-11 |
| 6145-00-254-6664 | As Req'd | WIRE: (8 AWG) (J-C-30) | 7-10-11 |

4. Installation

NOTE
Hand blind riveter (5120-00-973-0376) is used for installing blind rivet nuts in walls of semitrailer.
Install blind rivet nuts in accordance with MIL-N-47187.

a. Mark and drill eight 0.25-in. diameter holes in walls of semitrailer in accordance with figure 2. Install eight blind rivet nuts S37B80 in holes. Secure four strap loops (MS51939-3) to walls using eight #10XIL countersunk head machine screws (MS35191-276) threaded into blind rivet nuts.

b. Mark and drill thirty-six 0.25-in. diameter holes in semitrailer floor, storage cabinet walls, and storage cabinet tops in accordance with figures 1, 3, and 4. Install strap loops as follows:

(1) Install four straps loops (MS51939-3) in semitrailer floor using eight #10 x 1-3/4-in. countersunk head machine screws (MS35190-278), eight 5/32-in. flat washers (MS27183-6), eight #10 lockwashers (MS35338-43), and eight #10 hex nuts (MS35650-302).

(2) Install eight strap loops (MS51939-3) on storage cabinet tops using sixteen #10 x 2-1/4-in. countersunk head machine screws (MS35190-280), sixteen 5/32-in. flat washers (MS27183-6), sixteen #10 lockwashers (MS35338-43), and sixteen #10 hex nuts (MS35650-302).

CAUTION
Remove storage cabinet drawers adjacent to hole locations before drilling.

(3) Install six strap loops (MS51939-3) on storage cabinet walls using twelve #10 x 5/8-in. countersunk head machine screws (MS35190-272), twelve 5/32-in. flat washers (MS27183-6), twelve #10 lockwashers (MS35338-43), and twelve #10 hex nuts (MS35650-302).

**c. Follow steps (1) thru (24) below for equipment installation.**

**(1) Position engine lathe (3416-**00-725-3508) on semitrailer floor in accordance with figure 1. Using the base of the engine lathe as a template, mark and drill four 0.41-in. diameter holes through the floor. Secure engine lathe to floor using four 3/8- x 2-1/2-in. hex head capscrews (MS901725-68), eight 13/32-in. flat washers (MS2718-14), four 3/8-in. lockwashers (MS35338-46), and four 3/8-in. hex nuts (MS51967-8).

(2) Machine tool attachment grinding machine (3460-00-243-9607) is to be secured to the engine lathe's cross slide with T-bolts provided.

(3) Position lathe accessory case on semitrailer floor in accordance with figure 1. Using the lathe accessory case as a template, mark and drill four 0.34-in. diameter holes through the floor. Secure lathe accessory case to the floor using four 5/16- x 3-in. machine bolts (MS90725-44), four 11/32-in. flat washers (MS27183-12), four 5/16-in. lockwashers (MS35338-45), and four 5/16-in. hex nuts (MS51967-5).

(4) Secure wash pan (4940-00-795-3595) to the semitrailer front wall using one 48-in. retaining strap (7550588-3) in accordance with figure 1.

(5) Position two outside micrometer calipers (5210-00-555-8673 and 5210-00-555-8672) on semitrailer floor and secure with one 48-in. retaining strap (7550588-3) secured to the wall and floor, and one 66-in. retaining strap (7550588-9) parallel to the wall in accordance with figure 1.

**4. Installation--Continued**

(6) Position three storage cabinets (7125-00-357-5337) in the semitrailer in accordance with figure 1. Using the bases of the storage cabinets as templates, mark and drill twelve 0.31-in. diameter holes through the floor. Secure storage cabinets to floor using twelve 5/16- x 2-in machine bolts (MS90725-40) and twelve 11/32-in. flat washers (MS27183-12); under the floor use twelve 5/16-in. flat washers (AN970-5), twelve 5/16-in. lockwashers (MS35338-45), and twelve 5/16-in. hex nuts (MS51967-5).

(7) Position surface plate (5220-00-293-3556) on storage cabinet top in accordance with figure 4. Secure surface plate to storage cabinet top by placing one 66-in. retaining strap (7550588-9) parallel to semitrailer wall and one 48-in. retaining strap (7550588-3) perpendicular to wall.

(8) Position machinist's vise (5120-00-293-1439) on storage cabinet top in accordance with figure 4. Using the base of the machinist's vise as a template, mark and drill four 0.53-in. diameter holes through the storage cabinet top. Secure machinist's vise to storage cabinet top using four 1/2- x 3-1/2-in. hex head capscrews (MS90725-121) and four 17/32-in. flat washers (MS27183-18); on the underside use four 1/2-in. flat washers (AN970-8), four 1/2-in. lockwashers (MS35338-48), and four 1/2-in. hex nuts (MS51967-14).

(9) Position outside micrometer caliper set (5210-00-554-7134) to storage cabinet tops in accordance with figure 4. Secure outside micrometer caliper set cases to storage cabinet tops with one 66-in. retaining strap (7550588-9) placed parallel to semitrailer wall, and one 48-in. retaining strap (7550588-3) perpendicular to wall.

(10) Position drill grinding machine (3415-00-517-1050) on storage cabinet top in accordance with figure 4. Using the base of the drill grinding machine as a template, mark and drill four 0.53-in. diameter holes through storage cabinet top. Secure drill grinding machine to storage cabinet top using four 1/2- x 3-1/2-in. hex head capscrews (MS90725-121) and four 17/32-in. flat washers (MS27183-18); under the storage cabinet top use four 1/2-in. flat washers (AN970-8), four 1/2-in. lockwashers (MS35338-48), and four 1/2-in. hex nuts (MS51967-14).

(11) Position utility grinding machine (3415-00-255-2683) on storage cabinet top in accordance with figure 4. Using the base of the utility grinding machine as a template, mark and drill three (1.53-in. diameter holes through storage cabinet top. Secure utility grinding machine to storage cabinet top using three 1/2- x 3-1/2-in. hex head capscrews (MS90725-121) and three 17/32-in. flat washers (MS27183-18); under the storage cabinet top use three 1/2-in. flat washers (AN970-8), three 1/2-in. lockwashers (MS35338-48), and three 1/2-in, hex nuts (MS51967-14).

(12) Secure the pinch bar (5120-00-224-1384) and ground rod (5975-00-777-6781) to storage cabinet wall using two 12-in. retaining straps (7550588-6) in accordance with figure 1.

CAUTION

Remove storage cabinet drawers adjacent to hole locations before drilling.

(13) Using aluminum plate per spec QQ-A-250/1, fabricate four plates (7551848) in accordance with figure 5.

(14) Position one plate (7551848) on upper storage cabinet wall in accordance with figure 3. Remove two existing screws and nuts from storage cabinet wall that would interfere with installation of the plate. Reposition plate, mark outline and use as a template to drill two 0.28-in. diameter

4. Installation--Continued

holes through the storage cabinet wall. Fasten plate to storage cabinet wall using the two screws and nuts that were previously removed. Using the installed plate as a template, drill one 0.41-in. diameter hole through the storage cabinet wall. Also, mark and drill one 0.41-in. diameter hole through the lower storage cabinet wall in accordance with figure 3.

NOTE
Repeat step 14 three times for the other side of the storage cabinet group. Refer to figure 3.

(15) Assemble one 3/8- x 5-1/2-in. squareneck bolt (MS35751-84) with one 3/8-in. hex nut (MS51967-8), one 13/32-in. flat washer (MS27183-14), and one 3/8-in. lockwasher (MS35338-46). Place the squareneck bolt with assembled parts through the 0.41-in. diameter hole in plate atttached to upper storage cabinet wall and fasten to the wall using one 3/8-in. hex nut (MS51967-8). Install another 3/8- x 5-1/2-in. squareneck bolt with the same assembled parts in the 0.41-in. diameter hole in the lower storage cabinet wall following the same procedure.

NOTE
Repeat step 15 three times for the other side of the storage cabinet group. Refer to figure 3.

(16) Wrap one 50-ft electrical power cable assembly (6150-00-682-3460) around two squareneck bolts on the storage cabinet wall in accordance with figure 1. Secure 50-ft electrical power cable assembly with one 24-in. retaining strap (7550588-5).

(17) Install one 25-ft electrical power cable assembly (4910-00-725-9558), one 7-ft electrical power cable assembly (4910-00-800-1405), and two 25-ft extension lights (6230-00-729-9259) on the middle set of squareneck bolts located on the opposite side of storage cabinet group in accordance with figure 1.

(18) Install two 50-ft electrical power cable assemblies (6150-00-682-3460) on the remaining two pairs of squareneck bolts, one 50-ft electrical power cable assembly for each pair of squareneck bolts. Secure the cable assemblies and extension lights installed in steps 16 and 17 with one 48-in. retaining strap (7550588-3).

(19) Position upright drilling machine (3413-00-964-9379) on semitrailer floor in accordance with figure 1. Using the base of the upright drilling machine as a template, mark and drill four 0.41-in. diameter holes through the floor. Secure upright drilling machine to floor using four 3/8- x 2-1/4-in. hex head capscrews (MS90725-67) and four 13/32-in. flat washers (MS27183-14); under the floor use four 3/8-in. flat washers (AN970-6), four 3/8-in. lockwashers (MS35338-46), and four 3/8-in. hex nuts (MS51967-8).

(20) Machine table vise (3460-00-277-3504) is to be attached to the upright drilling machine table with the T-bolts provided with the machine table vise.

(21) Position gasoline engine generator set (6115-00-889-1447) on semitrailer floor in accordance with figure 1. Using the base of the gasoline engine generator set as a template, mark and drill four 0.66-in. diameter holes through the floor. Secure gasoline engine generator set using four 5/8- x 2-1/2-in. hex head capscrews (MS90725-166) and four 21/32-in. flat washers (MS27183-21); under the floor use four 5/8-in. flat washers (AN970-10), four 5/8-in, lockwashers (MS35338-50), and four 5/8-in. hex nuts (MS51967-20).

4. Installation--Continued

(22) Position portable tool box (5140-00-319-5079) on semitrailer floor in accordance with figure 1. Secure portable tool box using one 48-in. retaining strap (7550588-3).

(23) Stencil letters A, B, and C 0.50-in. high on front of hinged storage cabinet doors. Center within 0.12-in. using white enamel, color no. 27875 (TT-E-529) in accordance with figure 3.

(24) Apply black numbers, 0.50-in. high, to identification cards in accordance with MIL-STD-130. Place identification cards in holders provided on the storage cabinets in accordance with figure 3.

d. Follow steps (1) thru (21) below for installation of electrical components.

(1) Remove 0.75-in. diameter knockout slug from lower left side wall of existing circuit breaker in accordance with figure 6.

(2) Install 0.75- x 1.38-in. nipple (5975-01-082-6642) in circuit breaker. Secure using two 0.75-in. locknuts (5975-00-100-8767) and a 0.75-in. bushing (5975-00-100-8670) in accordance with figure 6.

(3) Before installation of power distribution panel, remove 0.75-in. diameter knockout slug from middle right side wall, 2.00-in. diameter knockout slug from lower right side wall, and 0.50-in. diameter knockout slug from upper left side wall of power distribution panel, Position the power distribution panel on the semitrailer wall by inserting the nipple, which is attached to the circuit breaker, through the 0.75-in. diameter hole. Using the power distribution panel as a template, mark and drill four 0.50-in. diameter holes through the inner wall of semitrailer. Install four screw expansion sleeves (5340-01-198-2494) in the wall. Reposition the power distribution panel and secure it to the wall using four pan head machine screws (MS35206-285). Secure the nipple attached to the circuit breaker to the power distribution panel using two 0.75-in. locknuts (5975-00-100-8767) and a 0.75-in. bushing (5975-00-100-8670) in accordance with figure 6.

(4) Mark and drill a 2.00-in. diameter hole through inner wall of semitrailer and a 2.38-in. diameter hole through outer wall of semitrailer in accordance with figures 6 and 7. Secure service entrance elbow (1495) to inner wall of semitrailer using a 2.00- x 2.00 in. conduit nipple (5975-00-849-6702) and a 2.00-in. locknut (5975-00-100-8776).

(5) Install plug, power entrance (5935-00-670-7895) to outer wall of semitrailer using existing hardware in accordance with figure 7.

(6) Install a 2.00- x 4.00-in. nipple (5975-00-057-6657) in the lower right knockout hole of the power distribution panel and secure with two 2.00-in. locknuts (5975-00-100-8776) and a 2.00-in. bushing (5975-00-100-/3709) in accordance with figure 6.

(7) Install one 2.00-in. conduit outlet (5975-00-892-9874) to the 2.00- x 4.00-in. nipple (5975-00-057-6657) and secure with a 2.00-in. locknut (5975-00-100-8776) in accordance with figure 6.

(8) Connect the 2.00-in. conduit outlet to the service entrance elbow with 2.013-in. flexible metal conduit (5975-00-178-1192) length as needed, and two 2.00-in. conduit fittings (5340-01-280-6139) in accordance with figure 6.

NOTE

Refer to figure 9 for dimensions for 050-in. rigid metal conduits.

4. Installation--Continued

(9) Remove 0.50-in. diameter knockout slug from top right side wall of the power distribution panel. Secure 0.50-in. rigid metal conduit (7551850-1 ) to the power distribution panel using a 0.50-in. box connector (5975-00-100-8721). Drill two 0.12-in. diameter pilot holes and secure 0.50-in. rigid metal conduit (7551850-1) to the semitrailer ceiling with two retaining straps (MS51956-1), two conduit clamp backs (5975-00-243-5447) and two #10 x 1-in tapping screws (MS51861-49) in accordance with figure 8.

(10) Attach 0.50-in. rigid metal conduit (7551850-2) to 0.50-in. rigid metal conduit (7551850-1) using a 0.50-in. conduit coupling (5975-00-100-8714). Drill three 0.12-in. diameter pilot holes and secure 0.50-in. rigid metal conduit (7551850-2) to the semitrailer ceiling using three retaining straps (MS51956-1), three conduit clamp backs (5975-00-243-5447), and three #10 x 1-in. tapping screws (MS51861-49) in accordance with figure 8.

(11) Remove two 0.50-in. diameter knockout slugs form 30A/240V ac enclosed switch box, one from top wall, one from bottom wall. Position 30A/240V ac enclosed switch box on semitrailer wall in accordance with figure 8. Using the 30A/240V ac enclosed switch box as a template, mark and drill four 0.12-in. diameter pilot holes. Secure 30A/240V ac enclosed switch box to wall using four #10 x 1-in. tapping screws (MS51861-49). Secure 0.50-in. rigid metal conduit (7551850-2) to top of 30A/240V ac enclosed switch box using one 0.50-in. box connector (5975-00-100-8721).

(12) Install 0.50-in. rigid metal conduit (7551850-3) to 30A/240V ac enclosed switch box and secure with 0.50-in. box connector (5975-00-100-8721). Drill a 0.12-in. diameter hole and secure 0.50-in. rigid metal conduit (7551850-3) to wall using retaining strap (MS519561), conduit clamp back (5975-00-243-5447), and #10 x 1-in. tapping screw (MS51861-49) in accordance with figure 8.

(13) Remove 0.50-in. diameter knockout slug from upper right side wall of junction box (4SSLD-1/2). Position junction box on semitrailer wall in accordance with figure 8. Using junction box as a template, mark and drill two 0.12-in. diameter holes. Secure junction box to the wall using two #10 x 1-in. tapping screws (11S51861-49). Secure the junction box (4SSLD-1/2) to 0.50-in. rigid metal conduit (7551850-3) using one 0.50-in. box connector (5975-00-100-8721). Install single receptacle cover (5975-00-141-0541).

(14) Install 0.50- x 5.00-in. nipple (5975-00-1158-2223) in knockout slug hole in upper left side wall of power distribution panel and secure with two 0.50-in. locknuts (5975-00-100-8775) and a 0.50-in. bushing (5975-00-100-8693) in accordance with figure 6.

(15) Remove two 0.50-in. diameter knockout slugs from 60A/240V ac enclosed switch box, one From the middle top wall and one from the lower right side wall. Position 60A/240V ac enclosed switch box on semitrailer wall in accordance with figure 6. Using the 60A/240V ac enclosed switch box as a template, mark and drill four 0.12-in. diameter holes. Secure the 60A/240V ac enclosed switch box to the wall using four #10 x 1-in. tapping screws (MS51861-49). Secure the 60A/240V ac switch box to the power distribution panel with two 0.50-in. locknuts (5975-00-100-8775) and a 0.50-in. bushing (5975-00-100-8693).

(16) Secure 0.50-in. rigid metal conduit (7551850-4) to the 60A/240V ac enclosed switch box with a 0.50-in. box connector (5975-00-100-8721). Drill three 0.12-in. diameter holes in semitrailer ceiling in accordance with figure 8. Secure 0.50-in. rigid metal conduit to ceiling using three retaining

straps (MS51956-1), three conduit clamp backs (5975-00-243-5447) and three #10 x 1-in. tapping screws (MS51861-49).

(17) Install 0.50-in. rigid metal conduit (7551850-5) to 0.50-in. rigid metal conduit (7551850-4) and secure with 0.50-in. conduit coupling (5975-00-100-8714). Drill a 0.12-in. diameter pilot hole in semitrailer ceiling in accordance with figure 8. Secure 0.50-in. rigid metal conduit (7551850-5) to the ceiling using retaining strap (MS51956-1), conduit clamp back (5975-00-243-5447), and #10 x 1-in. tapping screw (MS51861-49). Connect existing flexible metal conduit coming from the engine lathe to 0.50-in. rigid metal conduit (7551850-5) using coupling provided with engine lathe flexible metal conduit.

(18) Install grounding 8 AWG wire (6145-00-254-6664) length as required, to semitrailer chassis in accordance with figure 7. Secure non metal grommet (MS35489-94) to semitrailer floor and attach terminal lug (MS20659-141) to grounding 8 AWG wire using 3/4-in. hex head capscrew (MS30725-6), three 1/4-in. lockwashers (MS35135-33), and two 1/4-in. hex head plain nuts (MS51967-2).

(19) Use 50 feet of 10 AWG wire (6145-00-239-1330) to hook up engine lathe to electrical system and back to the power distribution panel. Use 75 feet of 10 AWG wire (6145-00-239-1330) to hook up upright; drilling machine to electrical system and back to the power distribution pane. Refer to figures 10 and 11.

(20) Install the four circuit breakers (5925-00-415-2286, 5925-00-865-3389 and 5925-00-998-7439) and the four cartridge fuses (W-F-1726/7 and 5920-01-234-1320) in accordance with figures 10 and 11.

(21) Mark circuit breakers in accordance with equipment to be operated on spaces provided on outside cover of power distribution panel in 0.12-in. high black letter.

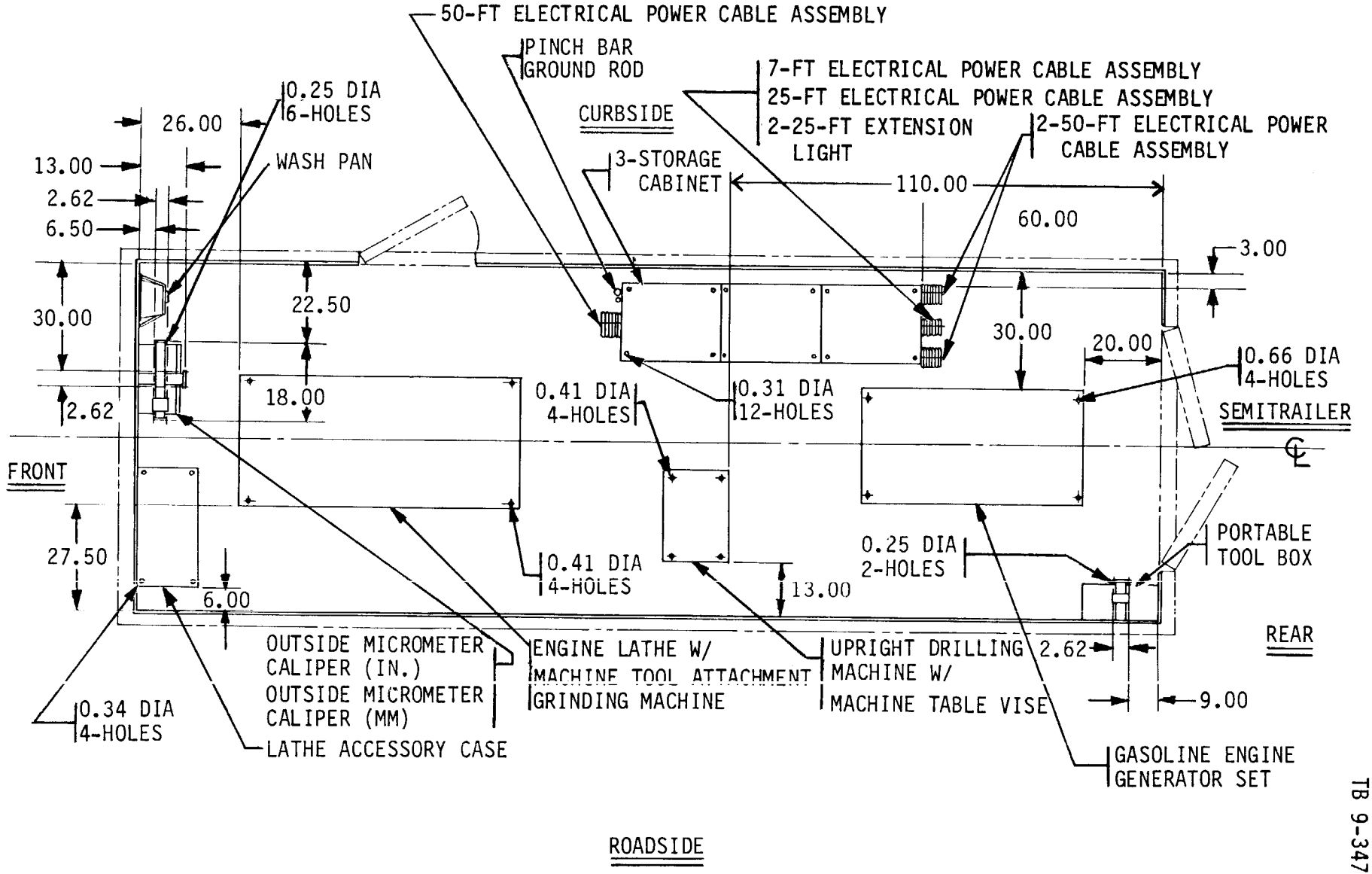



Figure 1. Components to be mounted.

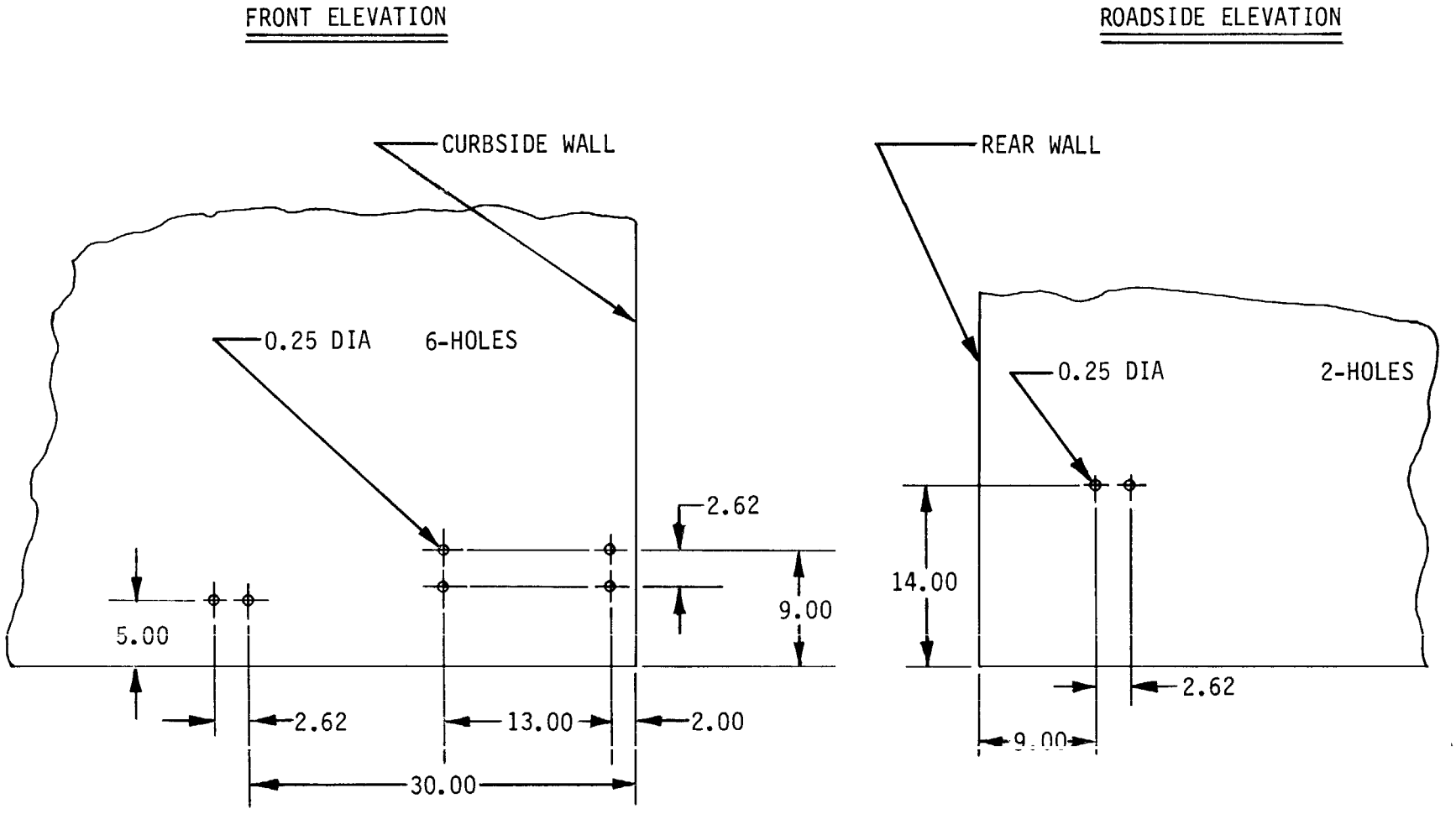



Figure 2. Dimensions for blind rivet nuts and strap loops.

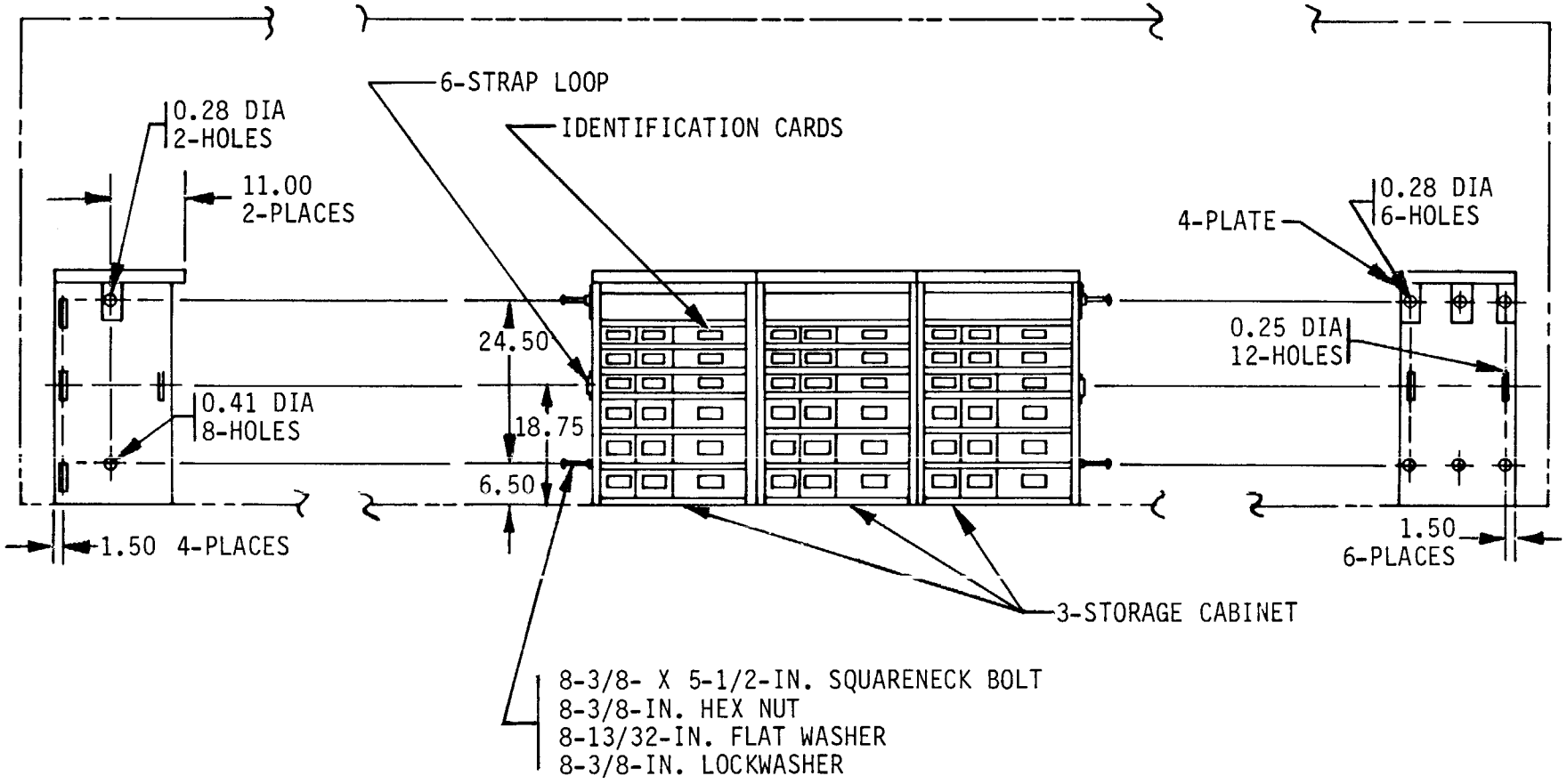



Figure 3. Dimensions for storage cabinet mounted cable holders.

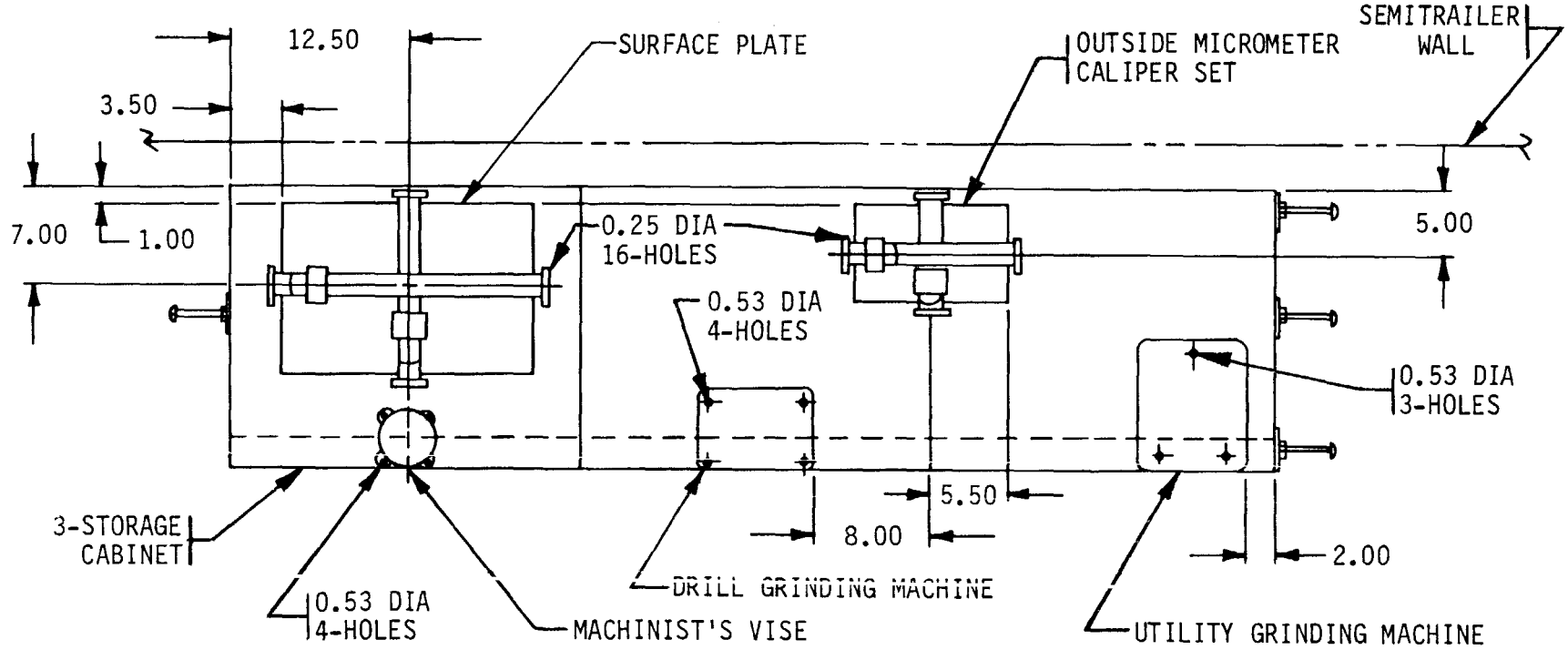



Figure 4. Dimensions for storage cabinet top mounted equipment.

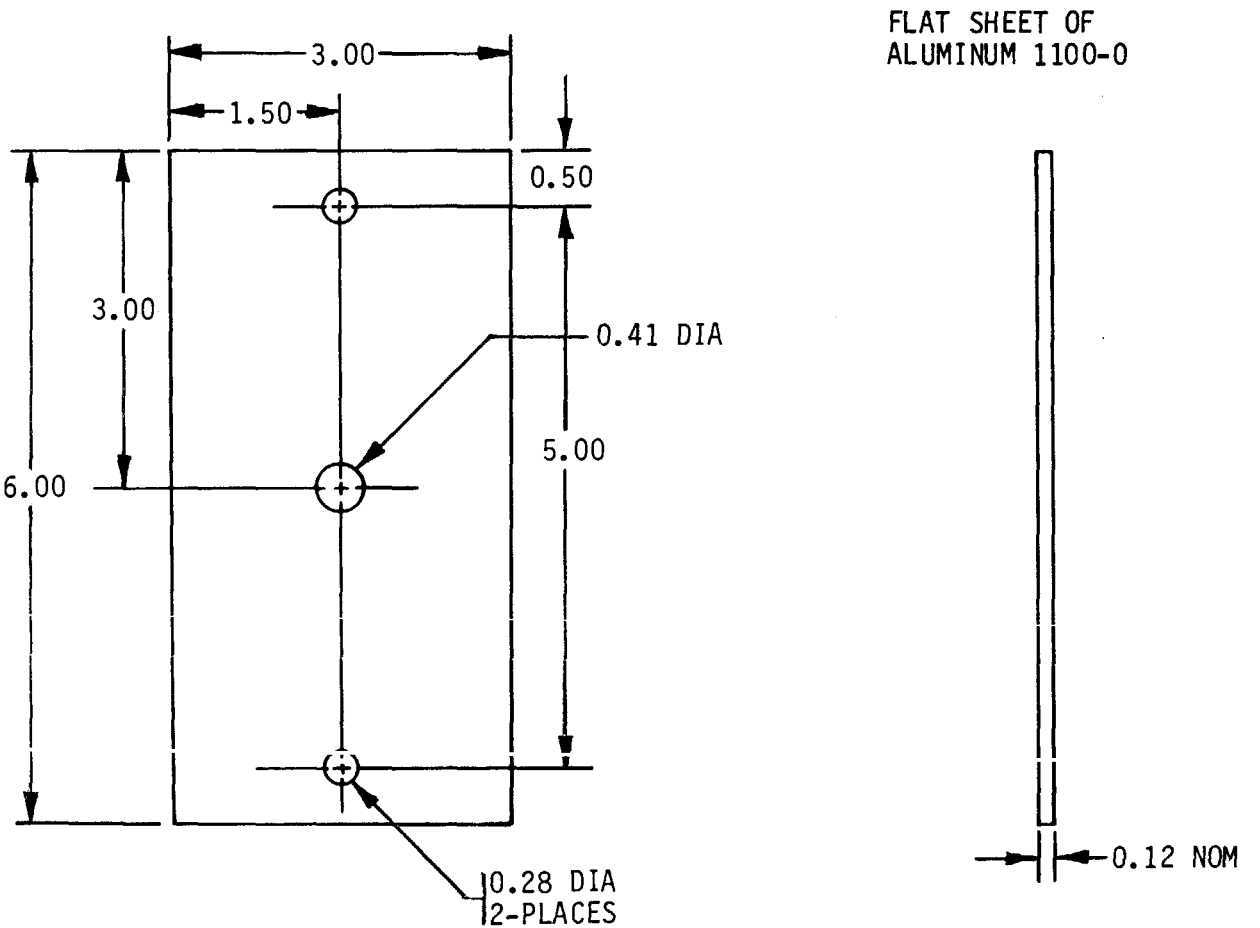



Figure 5. Dimensions for plate 7551848.

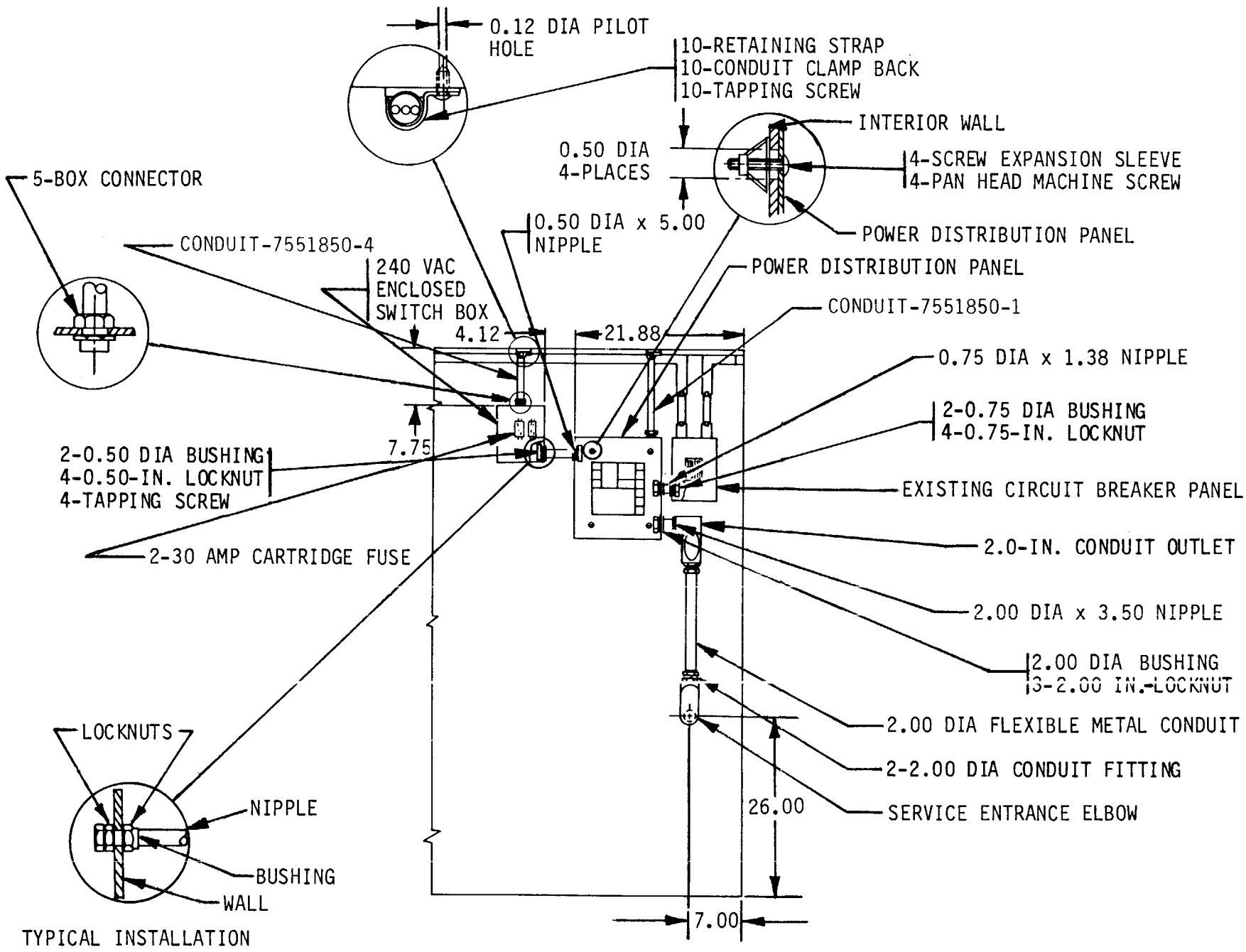



Figure 6. Electrical components to be mounted on front wall.

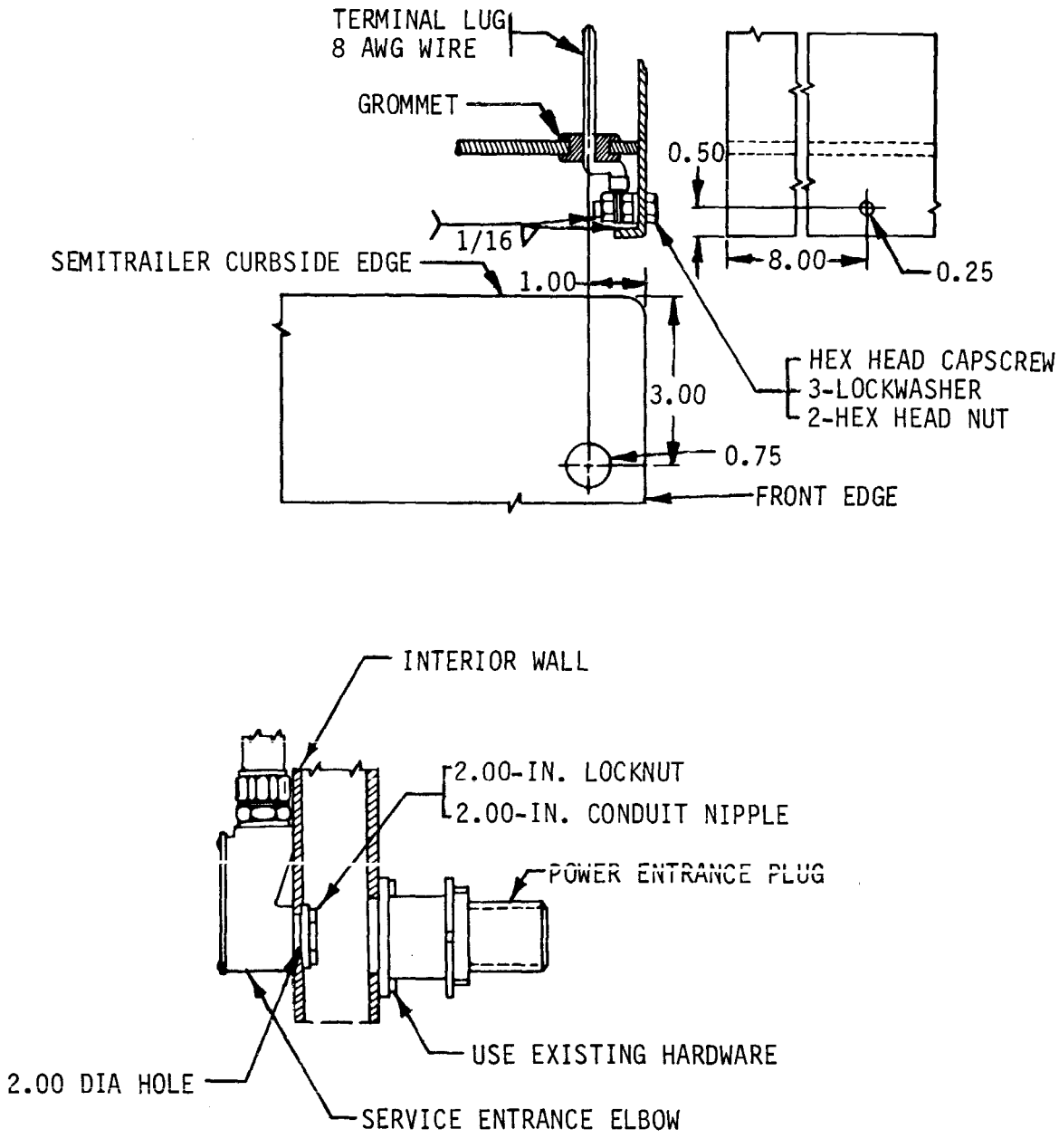



Figure 7. Dimensions for chassis grounding and service entrance elbow.

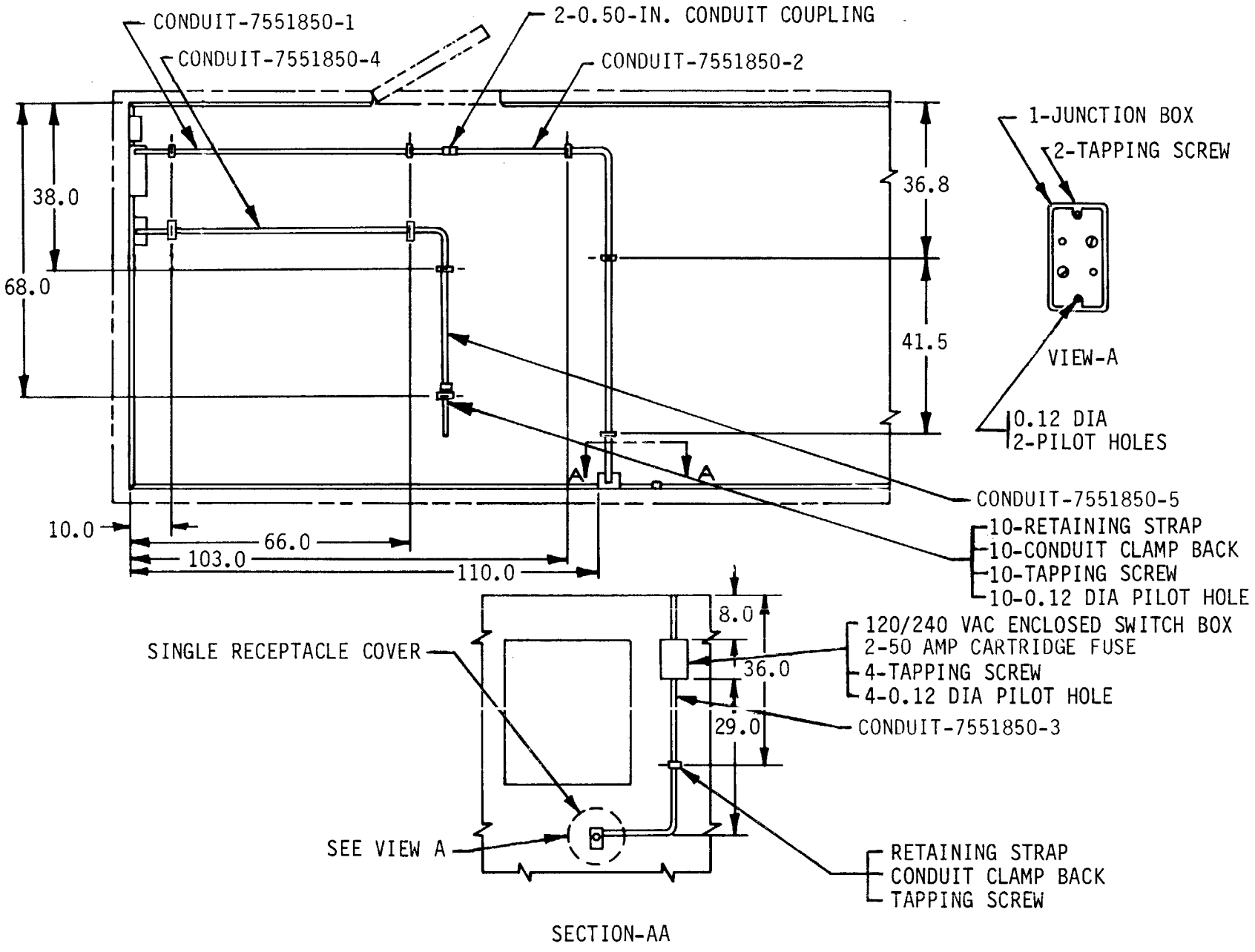
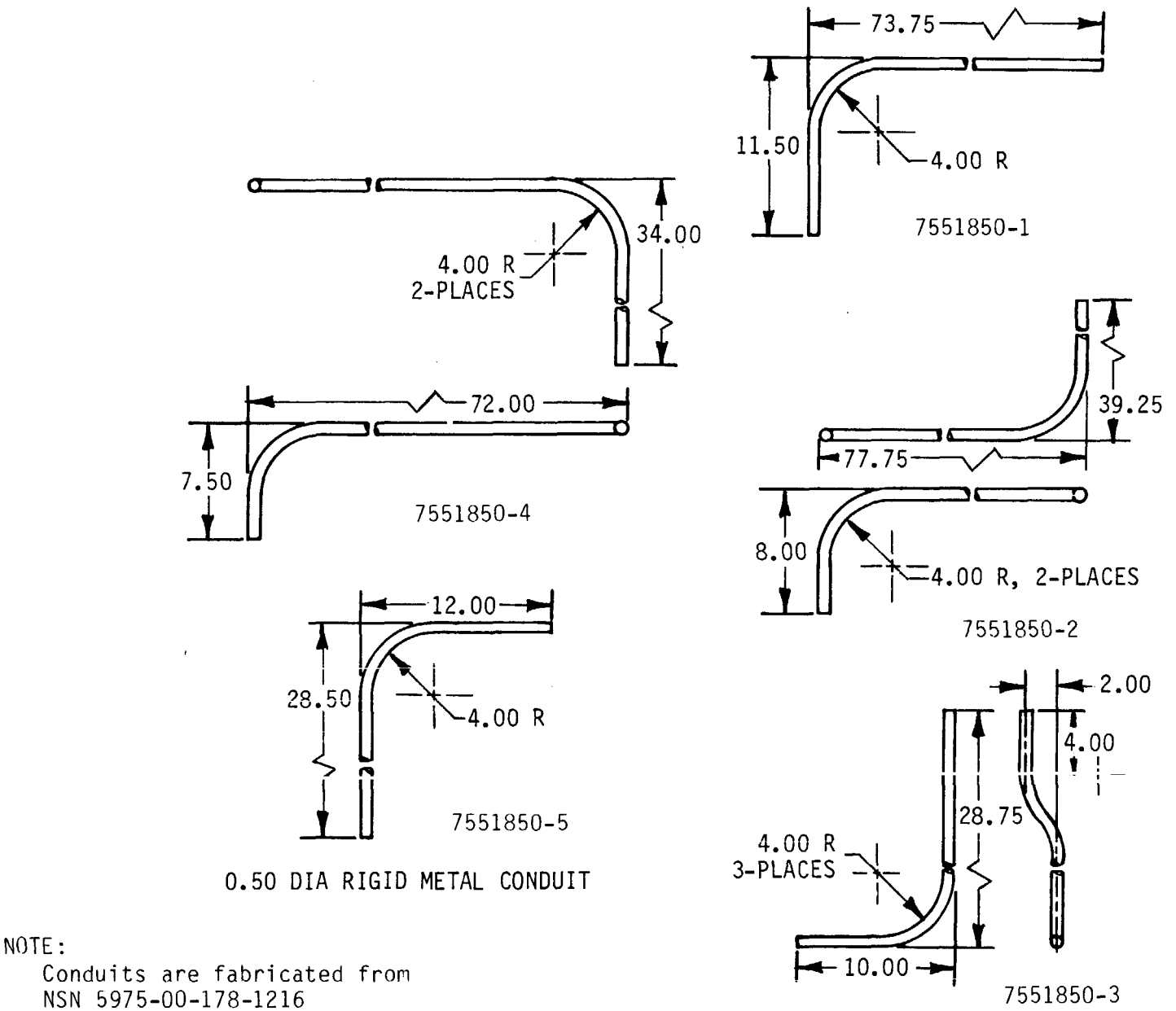



Figure 8. Electrical components to be mounted.




NOTE:
Conduits are fabricated from
NSN 5975-00-178-1216

Figure 9. Dimensions for conduits.

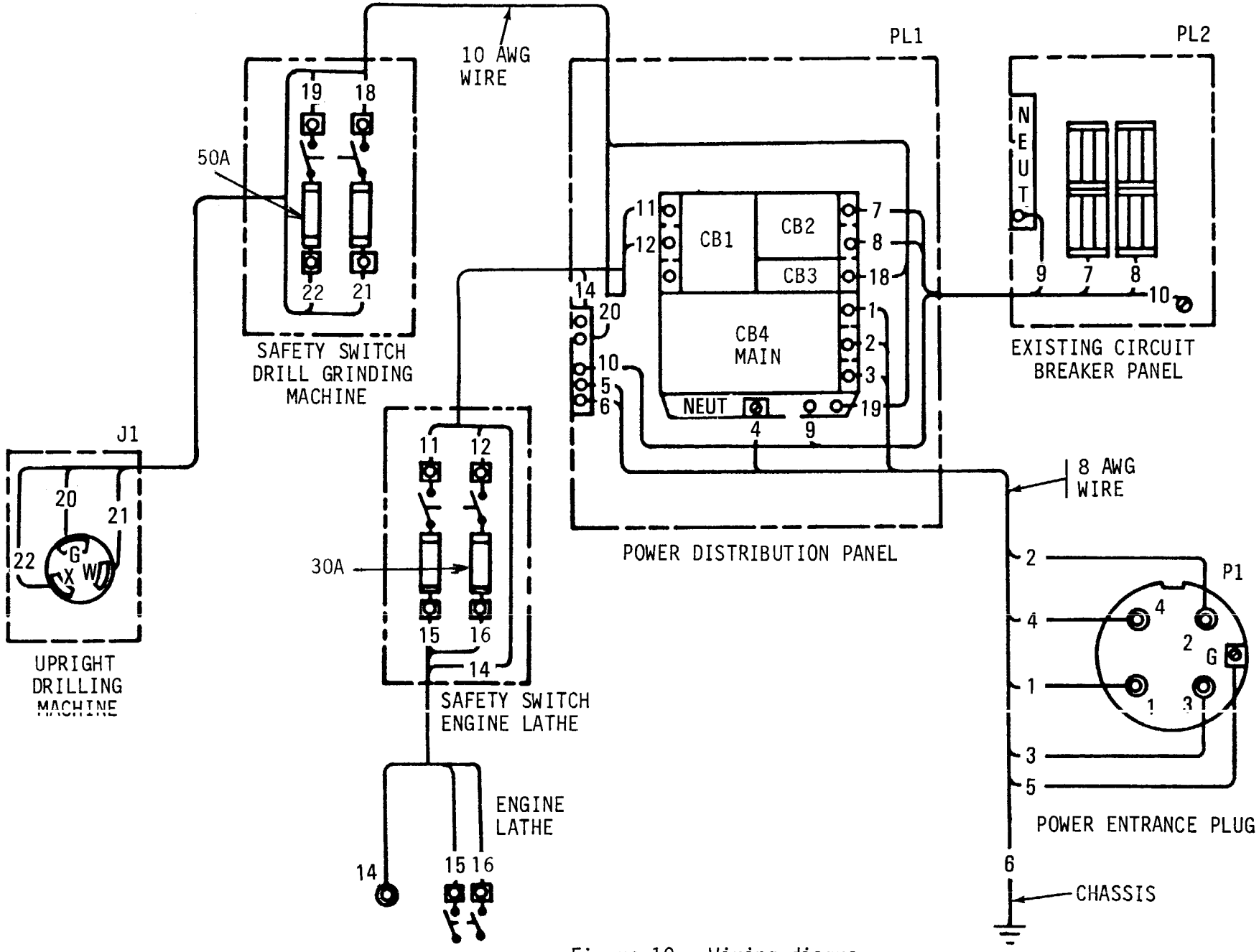



Figure 10. Wiring diagram.

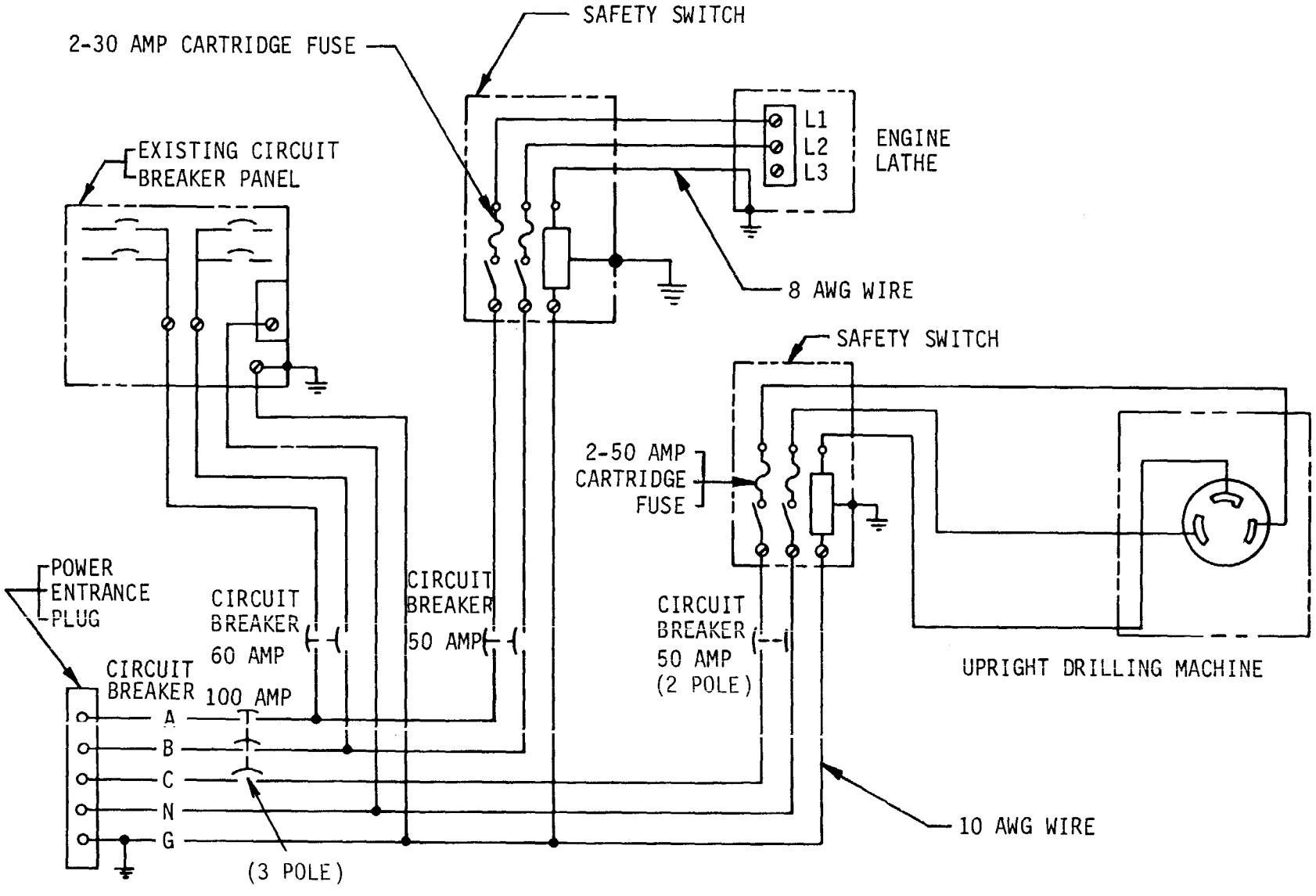



Figure 11. Wiring schematic.

Table 4. Standard Conversion Chart

| Nominal size | Decimal size | Nominal size | Decimal size |
|---|---|---|---|
| 1/16 | 0.06 | 35/64 | 0.55 |
| 5/64 | 0.08 | 9/16 | 0.56 |
| 3/32 | 0.09 | 37/64 | 0.58 |
| 7/64 | 0.11 | 19/'32 | 0.59 |
| 1/8 | 0.12 | 39/64 | 0.61 |
| 9/64 | 0.14 | 5/8 | 0.62 |
| 5/32 | 0.16 | 41/64 | 0.64 |
| 11/64 | 0.17 | 21/32 | 0.66 |
| 3/16 | 0.19 | 43/64 | 0.67 |
| 13/64 | 0.20 | 11/16 | 0.69 |
| 7/32 | 0.22 | 45/64 | 0.70 |
| 15/64 | 0.23 | 23/32 | 0.72 |
| 1/4 | 0.25 | 47/64 | 0.73 |
| 17/64 | 0.27 | 3/4 | 0.75 |
| 9/32 | 0.28 | 49/64 | 0.77 |
| 19/64 | 0.30 | 25/32 | 0.78 |
| 5/16 | 0.31 | 51/64 | 0.80 |
| 21/64 | 0.33 | 13/16 | 0.81 |
| 11/32 | 0.34 | 53/64 | 0.83 |
| 23/64 | 0.36 | 27/32 | 0.84 |
| 3/8 | 0.38 | 55/64 | 0.86 |
| 25/64 | 0.39 | 7/8 | 0.88 |
| 13/32 | 0.41 | 57/64 | 0.89 |
| 27/64 | 0.42 | 29/32 | 0.91 |
| 7/16 | 0.44 | 59/64 | 0.92 |
| 29/64 | 0.45 | 15/16 | 0.94 |
| 15/32 | 0.47 | 61/64 | 0.95 |
| 31/64 | 0.48 | 31/32 | 0.97 |
| 1/2 | 0.50 | 63/64 | 0.98 |
| 33/64 | 0.52 | 1 | 1.00 |
| 17/32 | 0.53 | | |

**By Order of the Secretary of the Army:**

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*General United States Army*
*Chief of Staff*

Official:

**R. L. DILWORTH**
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# THE METRIC SYSTEM AND EQUIVALENTS

## 'NEAR MEASURE

. Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
1 Kilometer = 1000 Meters = 0.621 Miles

## 'VEIGHTS

Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
1 Kilogram = 1000 Grams = 2.2 lb.
1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

## LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

## SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet
1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

## CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

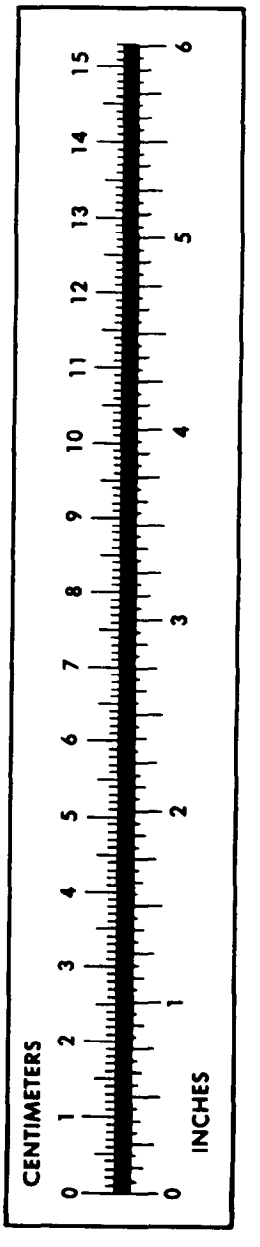
## TEMPERATURE

5/9(°F - 32) = °C
212° Fahrenheit is evuivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
9/5C° + 32 =°F

## APPROXIMATE CONVERSION FACTORS

| TO CHANGE | TO | MULTIPLY BY |
|---|---|---|
| Inches | Centimeters | 2.540 |
| Feet | Meters | 0.305 |
| Yards | Meters | 0.914 |
| Miles | Kilometers | 1.609 |
| Square Inches | Square Centimeters | 6.451 |
| Square Feet | Square Meters | 0.093 |
| Square Yards | Square Meters | 0.836 |
| Square Miles | Square Kilometers | 2.590 |
| Acres | Square Hectometers | 0.405 |
| Cubic Feet | Cubic Meters | 0.028 |
| Cubic Yards | Cubic Meters | 0.765 |
| Fluid Ounces | Milliliters | 29.573 |
| ıts | Liters | 0.473 |
| arts | Liters | 0.946 |
| allons | Liters | 3.785 |
| Ounces | Grams | 28.349 |
| Pounds | Kilograms | 0.454 |
| Short Tons | Metric Tons | 0.907 |
| Pound-Feet | Newton-Meters | 1.356 |
| Pounds per Square Inch | Kilopascals | 6.895 |
| Miles per Gallon | Kilometers per Liter | 0.425 |
| Miles per Hour | Kilometers per Hour | 1.609 |

| TO CHANGE | TO | MULTIPLY BY |
|---|---|---|
| Centimeters | Inches | 0.394 |
| Meters | Feet | 3.280 |
| Meters | Yards | 1.094 |
| Kilometers | Miles | 0.621 |
| Square Centimeters | Square Inches | 0.155 |
| Square Meters | Square Feet | 10.764 |
| Square Meters | Square Yards | 1.196 |
| Square Kilometers | Square Miles | 0.386 |
| Square Hectometers | Acres | 2.471 |
| Cubic Meters | Cubic Feet | 35.315 |
| Cubic Meters | Cubic Yards | 1.308 |
| Milliliters | Fluid Ounces | 0.034 |
| Liters | Pints | 2.113 |
| Liters | Quarts | 1.057 |
| ers | Gallons | 0.264 |
| ms | Ounces | 0.035 |
| ograms | Pounds | 2.205 |
| Metric Tons | Short Tons | 1.102 |
| Newton-Meters | Pounds-Feet | 0.738 |
| Kilopascals | Pounds per Square Inch | 0.145 |
| lometers per Liter | Miles per Gallon | 2.354 |
| meters per Hour | Miles per Hour | 0.621 |



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