

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

SHOP SET, INSTRUMENT AND FIRE CONTROL:

FIELD MAINTENANCE, BASIC

(4931-754-0740):

INSTALLATION IN ONE 6-TON,

2-WHEEL SHOP VAN SEMITRAILER, M146

Headquarters, Department of the Army, Washington, D.C.
6 October 1970

bulletin are to be used as a guide for installation of Shop Set, Instrument and Fire Control, Field Maintenance, Basic 2-Wheel Shop Van Semitrailer M146.

b. These instructions are to be followed as prescribed in most instances. However, slight variations the installation may be made at the discretion of the Officer in charge.

c. A complete list of items contained in included in SC 4931-95-CL-AO7.

d. Personnel performing this installation should have a practical knowledge of electricity. Special care should be exercised to electrical equipment.

e. Precautions should be observed when drilling holes through the body to insure the waterproof characteristics of the body are retained.

were extending through the floor of the van should have outer parts covered with undercoating similar to that used on the underside of vehicles. Care should be taken that holes drilled into the floor do not penetrate the frame or cross members of the vehicle.

f. Items not mentioned in this bulletin, that are components of the set, may be stowed in cabinets or secured in convenient places in such a manner as to avoid damage in transit.

Shop Set. a. The floor plan with each item in its designated spot is shown in figure 1. Curbside and roadside views are shown in figures 2 and 3 respectively. Figure 4.

support k. Equipment to be mounted and to be fabricated and mounted are listed in table 1. shows view of fabricated Nitrogen Tank.

Table 1. Equipnmt to be Mounted and Item to be Fabricated

FSN	Item Name		Wt. no.	
3444-243-2654	Equipment to be Mounted	1	1 and 2	A
4910-543-7772	PRESS, ARBOR, HAND OPERATED:	1	1, 2 and 3	B
7110-634-8596	TABLE, WORK, AUTOMOTIVE MAIN- TENANCE:	2	1, 2 and 3	C
3415-517-7754	STOOL, REVOLVING:	1	1 and 3	D
6830-292-0131	GRINDING MACHINE, UTILITY:	2	1 and 2	E
5120-293-1439	NITROGEN, TECHNICAL:	1	1 and 2	G
4910-543-7771	WISE, MACHINIST'S:	2	1,2 and 3	H
3413-221-8714	TABLE, WORK, AUTOMOTIVE MAIN- TENANCE:	1	1 and 2	I
7125-330-0130	DRILLING MACHINE, UPRIGHT:	2	1, 2 and 3	J
6115-889-1446	CABINET, STORAGE :	1	1 and 3	K
5130-204-2718	GENERATOR SET, GASOLINE ENGINE:	1	1 and 3	L
	DRILL, ELECTRIC, PORTABLE: WITH STAND			
	Item to be Fabricated and Mounted	3	1, 2 and 4	F
	NITROGEN TANK SUPPORT BLOCK: to ac- commodate cylinders			

b. Table 2 contains materials required to transit and hardwood for nitrogen tank support fabricate webbing starps for securing items in blocks.

Table 2. fFabricating Material

F S N	Material	I	Application
	BUCKLE: strap, 1 in. webbing accommodated		For application to webbing for securing straps.
	HARDWOOD 4 X 4 X 36		
8305-263-2477	WEBBING, TEXTILE: cotton, 1 in. w, 550 lb		For fabricating for holding stool C, nitrogen tank E, generator set K.

c. Hardware required for installation of items in the shop van are listed in table 3. Hardware items

will be drawn from stock or through the managing activity **having supply responsibility.**

5340-850-8060 LE: strap, 1 in. webbing

application to webbing for securing

For fabricating nitrogen tank support block
F

Table 3. Hardware

FSN	Nomenclature	Qty	Application
5306-010-2299	Bolt or gimlet pt.,5/16-9x1 1/2	2	Table B
5306-027-5803	BOLT MACHINE: S, hex-hd, 7/16-20UNF-3 a X 8	6	Nitrogen tank support block F
5306-225-8504	BOLT MACHINE: S, her-hd, cd-pltd, CHROMATED 5/16-18UNC-2A x 2	24	Tables B and H, cabinets J
5306-012-6705	BOLT, SQUARE NECK: (carriage bolt 3/8-16UNC-2A x 3	4	Drill L
5306-089-1422	BOLT, SQUARE NECK (carriage bolt) b-hd, S, 3/8 -16UNC-2A x 41/2	3	Drilling machine I
5366-702-2821	BOLT, SQUARE NECK: (carriage bolt) b-hd, S, 1/2-13UNC-2A x 3 1/2	4	Vice G
5306-059-1241	BOLT, SQUARE NECK: (carriage bolt, w/ sq nut) b-hd, S, 5/16-18UNC-2A x 3 1/2	4	Press A, grinding machine
5340-616-4660	LOOP, STRAP FASTENER: for 1 in. webbing	4	Nitrogen tank support block F, upper
5310-021-9434	NUT PLAIN, HEXAGON: S, cd-or zn-pltd, 1/2-NC-2B, 3/4 w. 9/16 thk	4	For 1 / 2 bolts
5310-880-7744	NUT PLAIN, HEXAGON: S, cd-pltd, 5/16-18UNC-2B, 1/2 w, 17/64 thk	24	For 5/16 bolts
5310-761-0654	NUT, PLAIN, HEXAGON: S, cd-pltd, 3/8-16UNC-2B, 9/16 w, 21/64 thk	7	For 3/8 bolts
5310-741-5305	NUT, PLAIN, HEXAGON: S, cd-pltd, 7/16-	6	For 7/16 bolts
5305-013-0384	SCREW, WOOD: rd-hd, no. 10, 2 1/2 lg	8	Nitrogen tank support block F, upper (strap fastener loops)
5310-273-7729	od, 0.065 thk	8	For no. 10 screws
5310-262-3003	WASHER, FLAT: S, rd, cd-pltd, 0.343 id, 0.625 od, 0.062 thk	28	For 5/16 bolts
5310-080-6004	WASHER, FLAT: S, rd, cd-pltd, chromated, 0.406 id, 0.812 od, 0.065 thk	7	For 3/8 bolts
5310-809-5998		4	For 1/2 bolts
5310-760-2021	WASHER, FLAT: S, rd, 0.500 id, 1.062 od, 0.074	6	For 7/16 bolts
5310-209-0061	WASHER FLAT: S, rd, zn-pltd, 0.500 id, 1.075 W, 4 lg, 1/2 thk S, rect, cd-pltd, 7/16 id, 2	24	For 5/16 bolts
5310-905-5454	WASHER, LOCK: S, cd-pltd, 7/16 bolt size, 0.600 od, 0.018 thk	6	For 7/16 bolts
5310-167-0677	WASHER, LOCK: S, cd-pltd, 0.509 id, 0.877 od, 0.099 thk	4	For 1/2 bolts
5310-209-1191	WASHER, LOCK: S, cd-pltd, chromated, 0.312 id, 0.562 od, 0.067 thk	28	For 5/16 bolts
5310-637-9541	WASHER, LOCK: S, cd-pltd, chromated, 0.375 id, 0.688 od, 0.094 thk	7	For 3/8 bolts

e. Ground all electrically powered machinery and power tools to the chassis of the shop van as a safety precaution against electrical shock to the operator.

f. One ground rod with cable assembly is included in the shop set for each shop van. Drive the ground rod into the ground and secure the cable assembly to the chassis of the shop van each time the shop set is placed in operation.

3. Shop Van. a. Automotive Maintenance Work Table (B) 4910-543-7772 and (H) 4910-543-7771 (Figs. 1, 2 and 3).

(1) There are three work tables to be installed in the shop van semitrailer. One work table, 4910-543-7772, is designated as B, and two work tables, 4910-543-777, are designated as H.

(2) Place automotive maintenance work table flush against the front wall of the van, and 9-inches from the right wall as shown in figure 1. Mark and drill six 11/32-inch holes for the legs. Secure the outside legs of the table with four 5/16-18 x 2-inch hexagon-head machine bolts 5306-225-8504, four 7/16-inch inside diameter rectangular flat washers 5310-209-0061, four 11/32-inch inside diameter flat washers 5310-262-3003, four 5/16-inch split lock washers 5310-209-1191, and four 5/16-18 hexagon plain nuts 5310-880-7744. Secure the center legs with two 5/16 x 1-1/2-inch lag bolts 5306-010-2299.

(3) Place one automotive maintenance work table (H) against the right wall, and other against the left wall of van. They are located 67-inches from the rear of the van as shown in figure 1. Mark and drill twelve 11/32-inch holes through the floor of the van. Secure work tables with twelve 5/16-18 x 2-inch hexagon-head machine bolts 5306-225-8504, twelve 7/16-inch inside diameter rectangular flat washers 5310-209-0061, twelve 11/32-inch inside diameter flat washers 5310-262-3003, twelve 5/16-inch split lock washers 5310-209-1191, and twelve 5/16-18 hexagon plain nuts 5310-880-7744.

b. Storage Cabinet (J) 7125-330-0130 (Figs. 1, 2 and 3). Place one of the storage cabinets flush with the right wall and 36-inches from the rear of the van as shown in figure 1. Place the other storage cabinet flush with the left wall and 90-inches from the front wall of the van as shown in figure 1. Mark and drill four 11/32-inch holes for each cabinet. Secure each cabinet with four 5/16-18 x 2-inch hexagon-head machine bolts 5306-225-8504, four 7/16-inch inside diameter rectangular flat washers 5310-209-0061, four 11/32-inch inside

diameter flat washers 5310-262-3003, four 5/16-inch split lock washers 5310-209-1191
5 16-18 hexagon plain nuts 5310-880-7744
c. Hand Operated Arbor Press 3444-243-2654

Figs. 1 and 2). Place the hand operated arbor Press (A) on work table (B) 7-inches from the left end and 2-inches from the front edge of the table top, as shown in figure 1. Mark and drill two 11/32-inch holes through the table top. Secure the press with two 5/16-18 x 3-1/2-inch square-neck carriage bolts, w / sq nuts 5306-059-1241, two 11/32-inch inside diameter flat washers 5310-262-3003, and two 5/15-inch split lock washer 510-209-1191.

d. Revolving Stool 7110-634-8596 (Figs. 1, 2 and 3). Each stool (C) will be secured to a table with webbing strap as shown in figure 2. Use webbing 8305-263-2477 and buckle 5340.850.8060, to fabricate webbing straps.

e. Utility Grinding Machine 3415-517-7754 (Figs. 1 and 3). Place the utility grinding machine (D) on work table (B), 7-1/2-inches from the right end and i-inches from the front edge of the table top, as shown in figure 1. Mark and drill two 11/32-inch holes through the table top. Secure the grinding machine with two 5/16-18 x 3-1/2-inch square-neck carriage bolts, w / sq nuts 53060059.1241, two 11/32-inch inside diameter flat washers 5310-262-3003, and two 5/16-inch split lock washers 5310-209-1191.

f. Technical Nitrogen (El 6830-292-0131 (Figs. 1 and 2). Secure the nitrogen tank to upper block with webbing strap. Fabricate strap using webbing 8305-263-2477 and a buckle 5340-850-8060. Position four strap fastener loops 5340-616-4660, 7-inches and 17-inches from each end of block. Secure with eight no. 10 2-1/2-inch round head wood screws 5305-013-0384 and eight 0.234-inch inside diameter flat washers 5310-273-7729. Loop webbing strap through fastener loops and buckle as required to hold tank firmly in position as shown in figure 2.

g. Nitrogen Tank Support Bloc (Figs. 1, 2 and 4).

(1) Fabricate three 36-inch long blocks (F) as shown in figure 4. Place blocks 77-inches from the front on the curb the van as shown in figure 1.

(2) Place one block 46-inches above and parallel to the floor. Mark and drill approximately two inches from each end of block, two 1/2-inch holes **through** block and side of van. Secure with two 7/16-20 x 8-inch hexagon-head machine bolts 5306-027-3803, two 1/2-inch inside diameter washers 5310-760-2021, **two 7/16-inch split lock**

washers. 5310-905-5454, and two 7/16-20 hexagon plain nuts 53110-741-5305. (3) Two blocks are to be positioned on the floor. Place one flush with the wall, under and parallel with 3.g.2 above. Place other block directly in front where cut-out portion will hold nitrogen tank snugly between blocks. Mark and drill two inches from each end of blocks, four 1/2-inch holes through blocks and floor of van. Secure each block with two 7/16-20 x 8-inch hexagon-head machine bolts 5306-027-5803, two 1/2-inch inside diameter flat washers 5310-760-2021, two 7/16-inch split lock washers 5310-905-5454, and two 7/16-20 hexagon plain nuts 5310-741-5305.

h. Machinist's Vise 5120-293-1439 (Figs. 1 and (2)). Place the machinist's vise (G) on work table (H) 2-1/2-inches from the left end and flush with the front edge of the table top, as shown in figure 1. Mark and drill three 9/16-inch holes through the table top. Secure the vise with three 1/2-13 x 3-1/2-inch square-neck carriage bolts 5306-702-2821, three 1/2-inch inside diameter flat washers 5310-809-5998, three 1/2-inch split lock washers 5310-167-0677, and three 1/2-13 hexagon plain nuts 5310-021-9434.

NOTE. Four each of the above hardware items are listed to meet the requirements of models having four mounting holes.

i. Upright Drilling Machine 3413-221-8714 (Figs. 1 and 2). Place the upright drilling machine (I) on work table (H), 2-1/4-inches from the right end and flush with the front edge of the table top, as shown in figure 1. Mark and drill three 7/16-inch holes through the table top. Secure the drilling machine with three 3/8-16 x 4-1/2-inch square-neck carriage bolts 5306-089-1422, three 13/32-inch inside diameter flat washers 5310-080-6004,

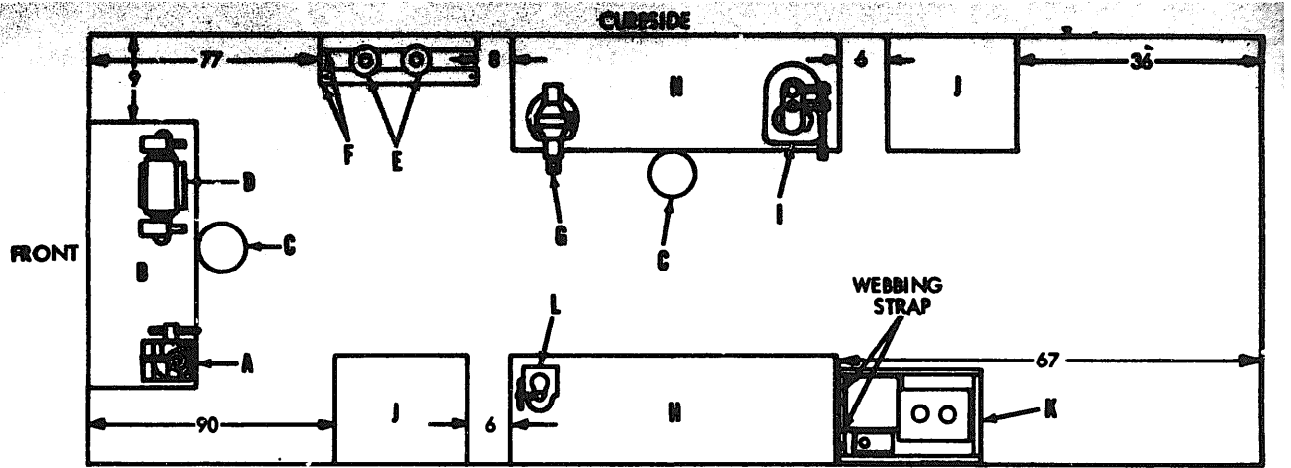
three 3/8-inch split lock washers 5310-637-9541, and three 3/8-16 hexagon plain nuts 5310-761-0654.

j. Gasoline Engine Generator Set 6115-889-1446 (Figs. 1 and 3). Place the gasoline engine generator set (K) on the van floor 2-inches from the left wall and flush against table (H) as shown in figure 1. Secure the generator to the table legs with webbing straps. Use webbing 8305-263-2477 and buckle 5340-850-8060, to fabricate webbing straps.

CAUTION: The generator set is secured in the van for transportation purposes only, and must be removed from the van before being placed in operation.

k. Portable Electric drill (with stand) 5130-204-2718 (Figs. 1 and 3). Place the portable electric drill (with stand (L) on work table (H) 4-inches from the right end and 5-inches from the front edge of the table top, as shown in figure 1. Mark and drill four 7/16-inch holes through the table top. Secure the drill with four 3/8-16 x 3-inch square-neck carriage bolts 5306-012-6705, four 13/32-inch inside diameter flat washers 5310-080-6004, four 3/8-inch split lock washers 5310-637-9541, and four 3/8-16 hexagon plain nuts 5310-761-0654.

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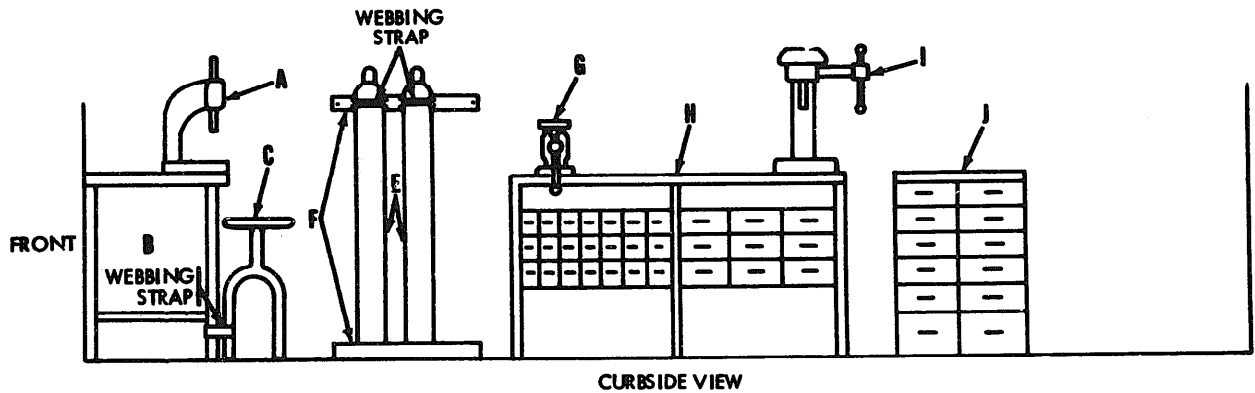


- ROADSIDE
- A - PRESS ARBOR, HAND OPERATED - 3444-243-2654
 - B - TABLE WORK, AUTOMOTIVE MAINTENANCE 4910-543-7772
 - C - STOOL, REVOLVING - 7110-634-8596
 - D - GRINDING MACHINE, UTILITY - 3415-517-7754
 - E - NITROGEN, TECHNICAL - 6830-292-0131
 - F - NITROGEN TANK SUPPORT BLOCK (SEE FIGURE 4)
 - G - VISE, MACHINIST - 5120-293-1439
 - H - TABLE, WORK, AUTOMOTIVE MAINTENANCE - 4910-543-7771
- 22108714

NOTE: ALL DIMENSIONS SHOWN ARE IN INCHES.

WE 38414

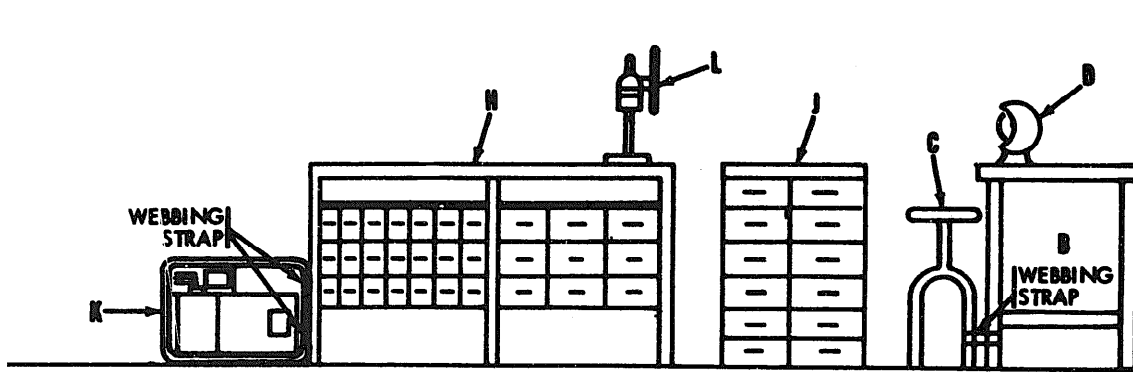
Figure 1. Floor plan.



- A - PRESS, ARBOR, HAND OPERATED
- B - TABLE, WORK, AUTOMOTIVE MAINTENANCE
- C - STOOL, REVOLVING
- E - NITROGEN, TECHNICAL
- F - NITROGEN TANK SUPPORT BLOCK (SEE FIGURE 4)
- G - VISE, MACHINISTS
- H - TABLE WORK AUTOMOTIVE MAINTENANCE
- I - DRILLING MACHINE, UPRIGHT
- J - CABINET, STORAGE

WE 38412

Figure 2. CurSide view.

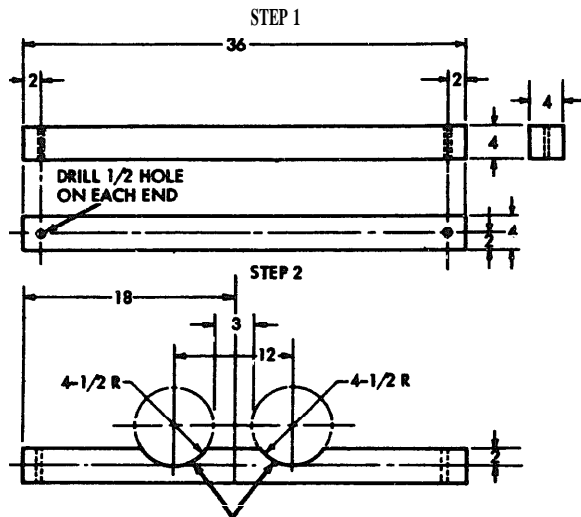


ROADSIDE VIEW

- B-TABLE, WORK, AUTOMOTIVE MAINTENANCE
- C - STOOL, REVOLVING
- D-GRINDING MACHINE, UTILITY
- H-TABLE, WORK, AUTOMOTIVE MAINTENANCE
- J - CABINET STORAGE
- K - GENERATOR SET, GASOLINE ENGINE
- L - DRILL, ELECTRIC PORTABLE, WITH STAND

WE 384 13

Figure 3. Roadside view.



CuT-OUT

NITROGEN TANK
SUPPORT BLOCK

NOTE: MAKE (3) THE SAME, FROM
4 X 4 X 36 in. HARDWOOD.

NOTE: ALL DIMENSIONS SHOWN ARE IN INCHES.

WE 38415

Fabrication instructions.

By *Order* of the Secretary of the Army:

W. C. WESTMORELAND,
General, United States Army,
Chief of Staff.

O f f i c i a l :

K E N N E T H G W I C K .
Major General, United States Army,
.. *The Adjutant General.*

D I S T R I B U T I O N :

To be distributed in accordance with DA Form 12-21 (qty rqr Block No. (141).
requirements for FSC **Group 4931-CL.**

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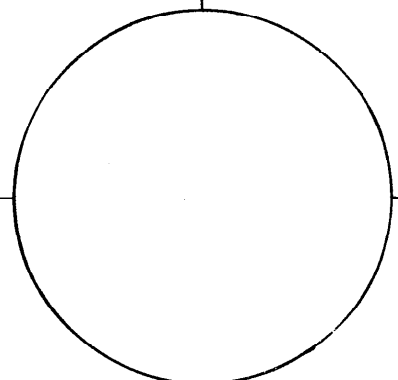
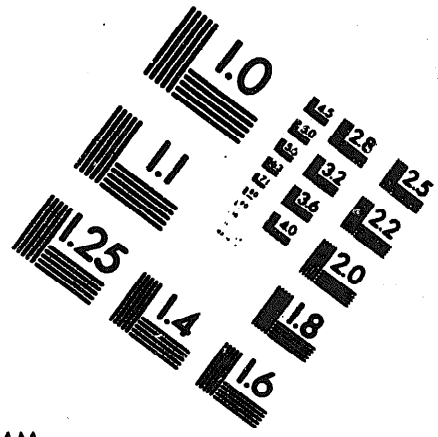
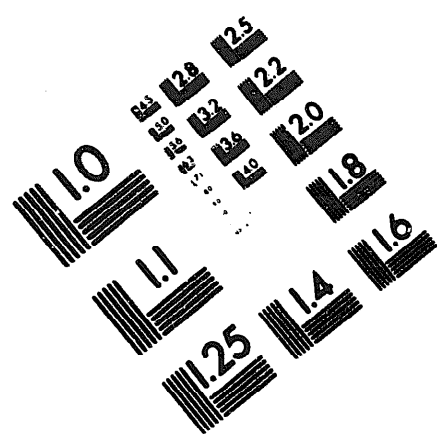
7-18-83

DATE



DEPARTMENT OF THE ARMY

MICROFORM
TEST TARGET



150 MM

1.0 mm (e= .81 mm)

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1.5 mm (e= 1.09 mm)

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2.0 mm (e= 1.37 mm)

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2.5 mm (e= 1.77 mm)

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1.0 mm (e= .81 mm)

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1.5 mm (e= 1.09 mm)

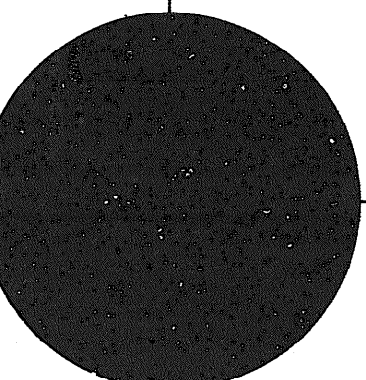
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2.0 mm (e= 1.37 mm)

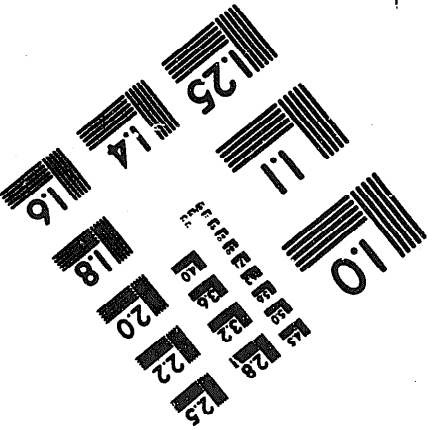
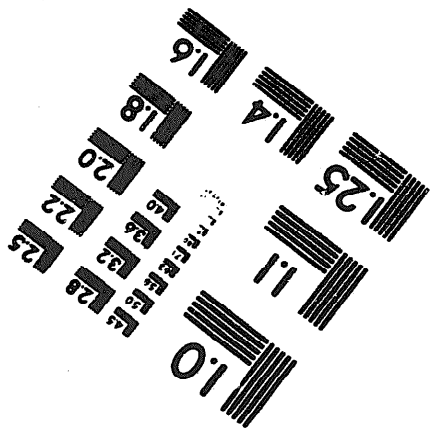
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2.5 mm (e= 1.77 mm)

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200 MM



250 MM