DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

APPLICATION OF SPECIAL PURPOSE MODIFICATION TO TRAILER, GENERATOR, 2-1/2 TON, TWO WHEEL: M200A1 FOR USE WITH LAUNCHER, MINE CLEARANCE: MK155, MOD 1, AS COMPONENT OF MINE CLEARING LINE CHARGE (MICLIC)

HEADQUARTERS, DEPARTMENT OF THE ARMY, WASHINGTON, D.C.
15 June 1989

REPORTING OF ERRORS

You can help improve this bulletin. If you find any mistakes or know of a way to improve the procedures, please let us know. Mail your DA Form 2028 (Recommended Changes to Publications and Blank Forms), direct to Commander, U.S. Army Armament, Munitions and Chemical Command, ATTN: AMSMC-MAY-T (D), Picatinny Arsenal, NJ 07806-5000.

SECTION I. INTRODUCTION

1. Purpose. The purpose of this technical bulletin is to provide direct support maintenance the capability to perform the modification, when required, to convert a standard M200A1 Trailer for use with the Launcher, Mine Clearance: MK155, MOD1

2 Scope. This bulletin contains data to convert a standard M200A1 Trailer for use with the MICLIC. When the mission is completed, the converted trailer will be returned to Its original configuration.

3. Associated Technical Manual. Operator/maintenance level of the MK 155, MOD1 launcher is covered in TM 9-1375-215-14&P.

SECTION II. INFORMATION AND PROCEDURES FOR MODIFICATION OF M200A1 TRAILER

4 Disassemble Instructions.

NOTE

After disassembly, some parts will be reused in the modified. configuration, some parts will be discarded, and some parts will be prepared and stored for reuse when the trailer is restored to its original configuration. These parts are identified by the codes cited in Table 1 and Figures 1,2,3,4, and 6.

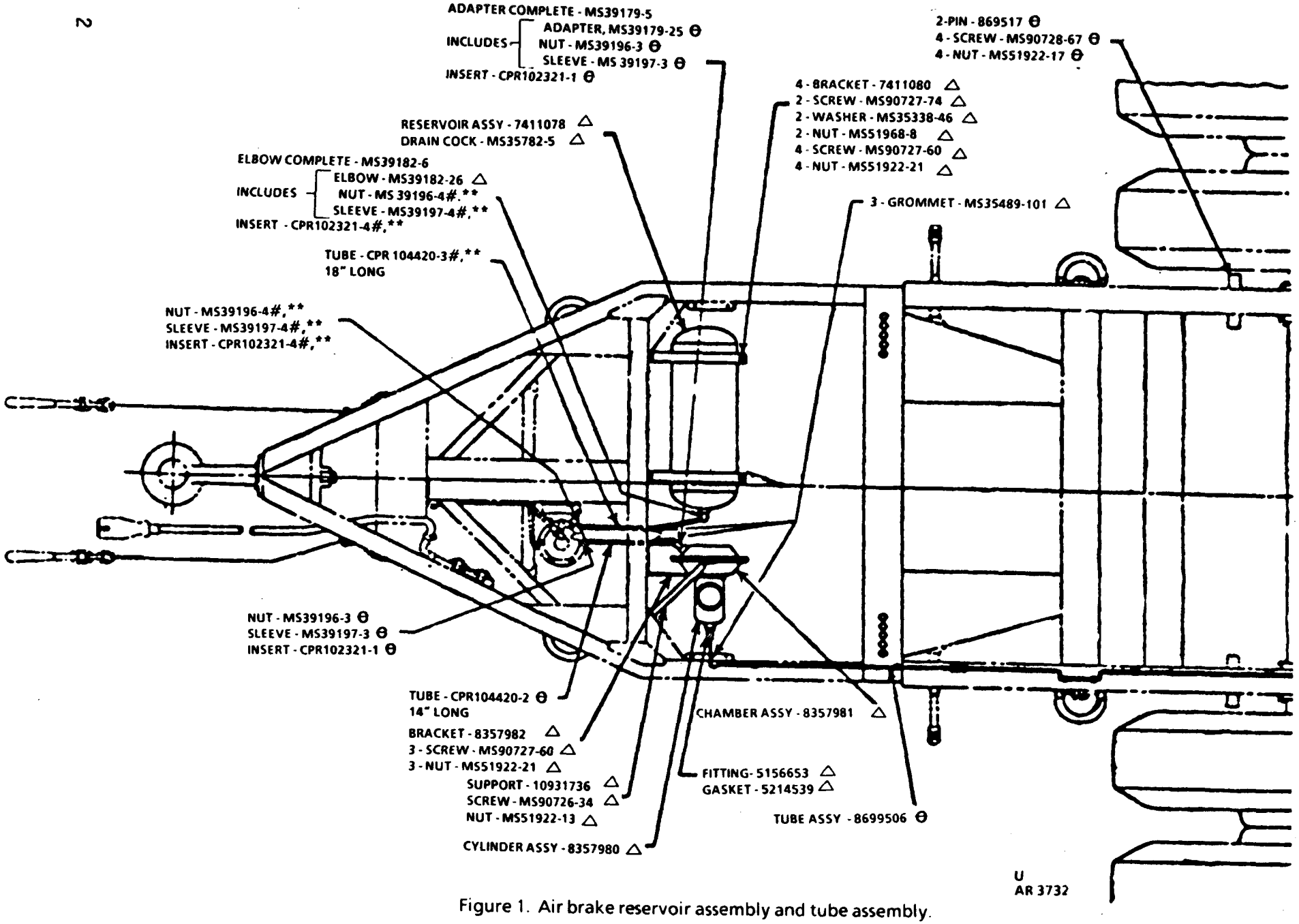

Figure 1. Air brake reservoir assembly and tube assembly.

a. Prior to disassembly, the air brake reservoir assembly and tube assembly will be repressurized (fig. 1 and fig. 3).

b. Disassemble chamber assembly and reservoir assembly. Remove tubes, supports, and brackets from reservoir and chamber assembly (fig. 1). Cut tube CPR104420-3 and discard with associated accessories (fig. 1).

c. Remove rear step jacks (fig. 2) Disconnect pins, hooks, nuts, and bolts attaching jacks to frame. Prepare and store items until MICLIC usage of the trailer is completed. Stored items are required to restore trailer to its original configuration..

d. Remove clamp and accessories (fig. 3). Disconnect and remove clamp and accessories. Store clamp and accessories for reuse with modification assembly.

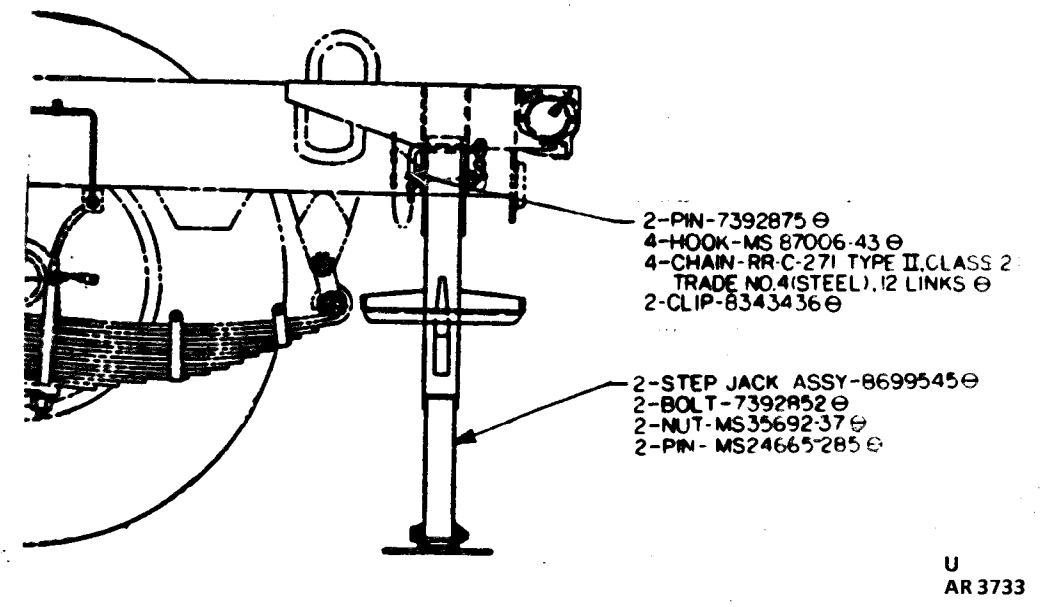

Figure 2. Rear step jacks.

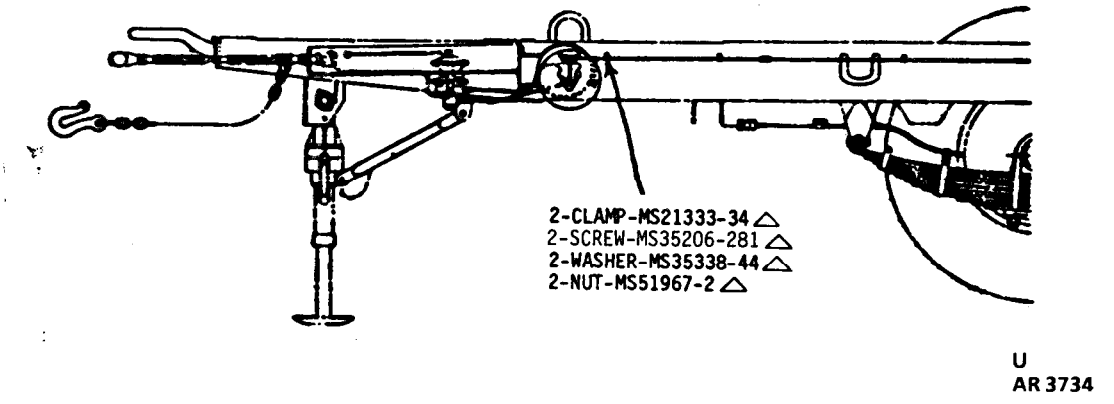

Figure 3. Clamp and accessories.

5. Reassemble Instructions.

a. See Table 2 for list of items required for reassembly of the M200A1 Trailer. These items will be requisitioned as raw stock material. Perform the required cutting, bending, drilling, welding, flaring, and attaching of accessories in accordance with applicable drawings. Accessories are listed in Table 3.

b. Bracket assembly for reservoir assembly, Figure 4, will be assembled by the operation stated in paragraph 5.a. Once assembled, this item will be positioned and secured on center of the cross member (8699473), Figure 5, by drilling four 13/32 - inch holes as shown in Figure 5, and using the appropriate accessories from Table 3.

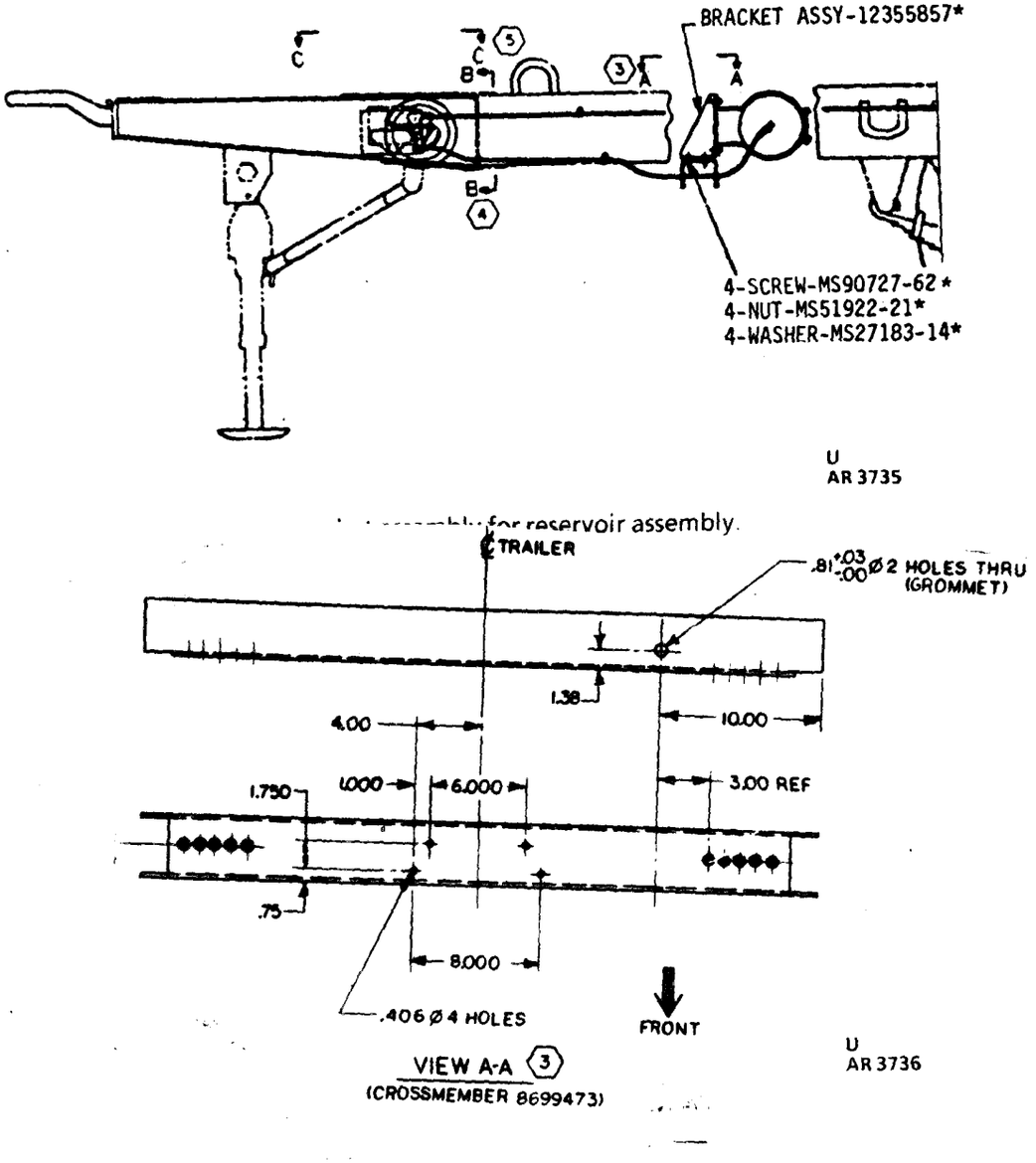

Figure 5. Crossmember view A-A

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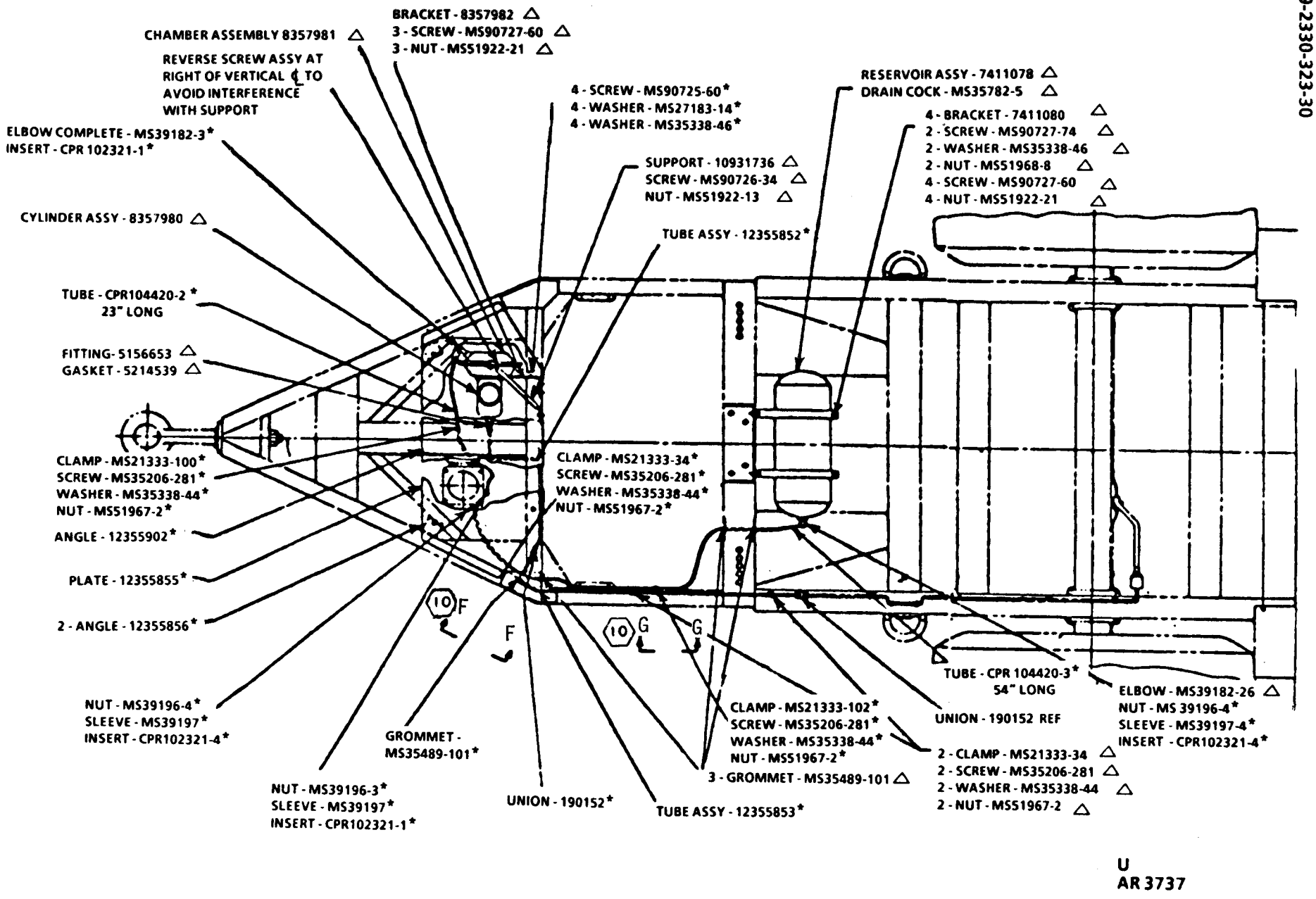

Figure 6. Chamber assembly, cylinder assembly, reservoir assembly, and tube assembly.

c. Use same four brackets (7411080) and accessories (fig. 6) stored from disassembly procedures. Secure reservoir assembly to bracket assembly.

d. Use same bracket (8357982) and accessories, same support (10931736) and accessories (fig. 6) stored from disassembly procedures. Drill three 27/64 - inch holes and one 11/32-inch hole (fig. 7), reposition and secure chamber assembly on crossmember (8699468).

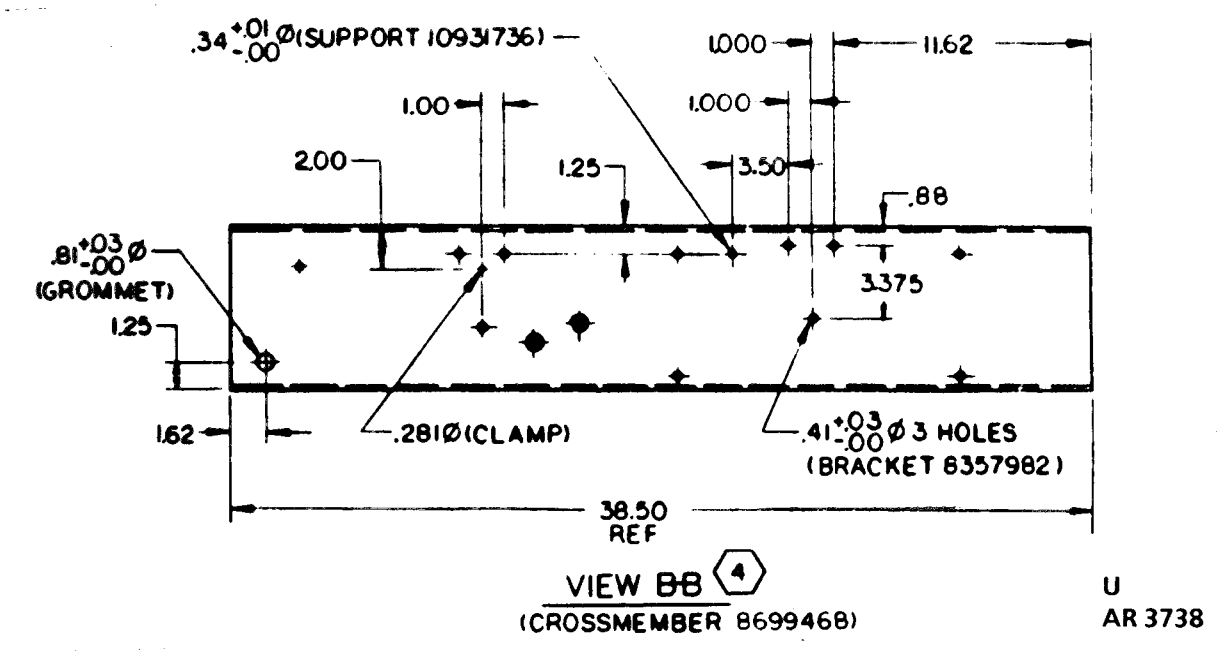

Figure 7. Crossmember (view B-B).

e. All tubes and tube assemblies will be acquired and assembled per paragraph 5.a. Drill 13/16 - inch holes in crossmember, grommets, and attach clamps to secure tubes as indicated in Figures 5, 7, 13, and 14. Care must be taken when installing certain tubes through crossmember, Figure 6, before attachments and flaring can be accomplished. Reconnect tubes by union and terminal ends to the proper assemblies per Figure 6.

f. Drill two 7/16 - inch holes in cross member (8699468), figure 8, to accommodate safety plate (12355855), Figure 15. Tack weld nut MS51967-8 under each hole, Figure 9.

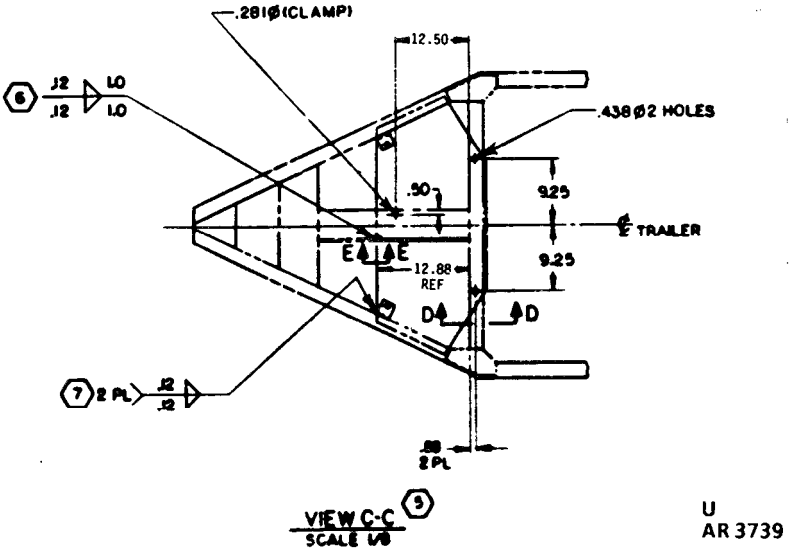

Figure 8. Crossmember (view C-C).

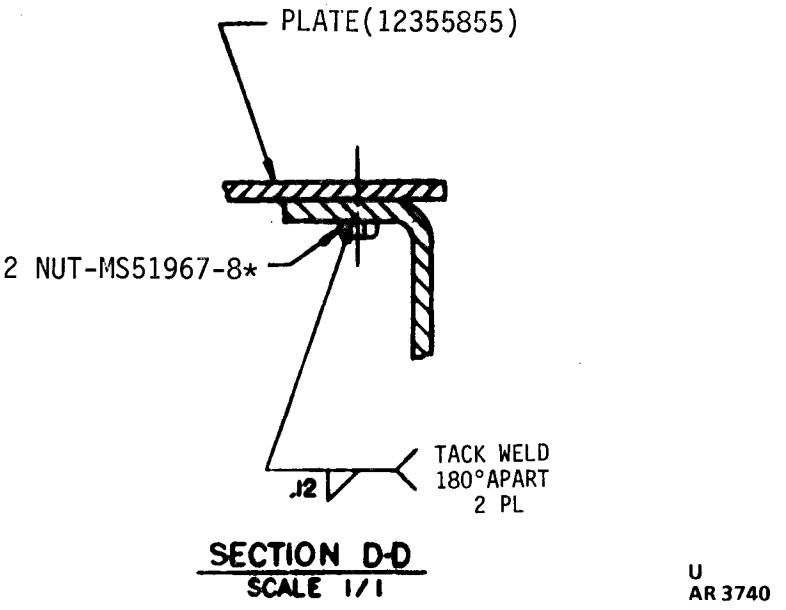

Figure 9. Tacking of weld nut.

g. Cut, drill, and tack weld nut (MS51967-8) onto the small safety plate support angles in accordance with Figure 10.

h. Cut and drill one larger safety plate support angle in accordance with Figure 11.

CAUTION

Care must be taken when welding supports to frame to protect nearby tubing from damage.

i. Weld two smaller safety plate supports to frame in accordance with Figure 8.

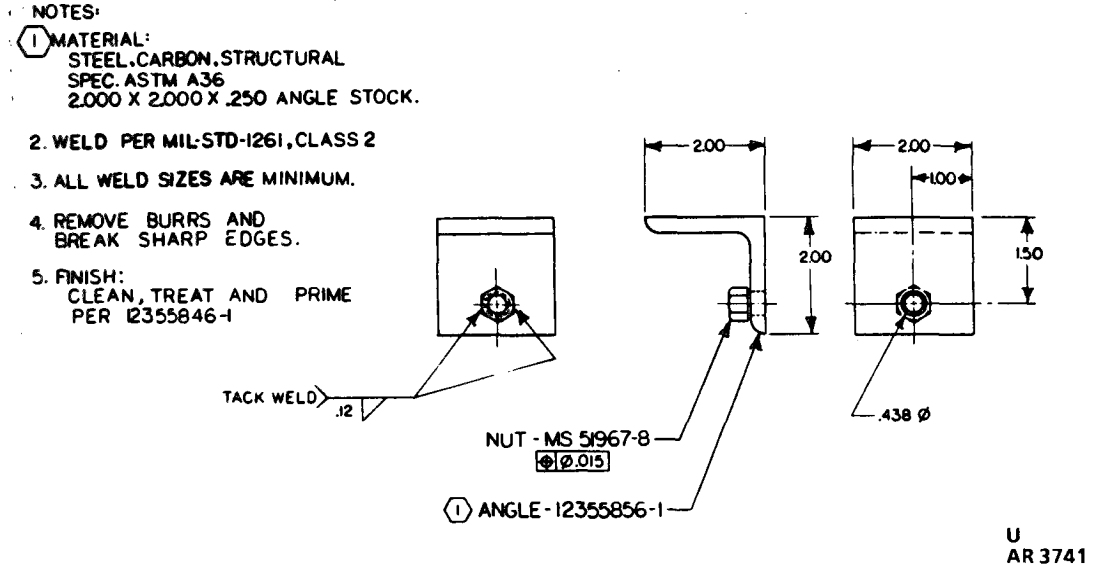

Figure 10. Angle - safety plate support (view D-D).

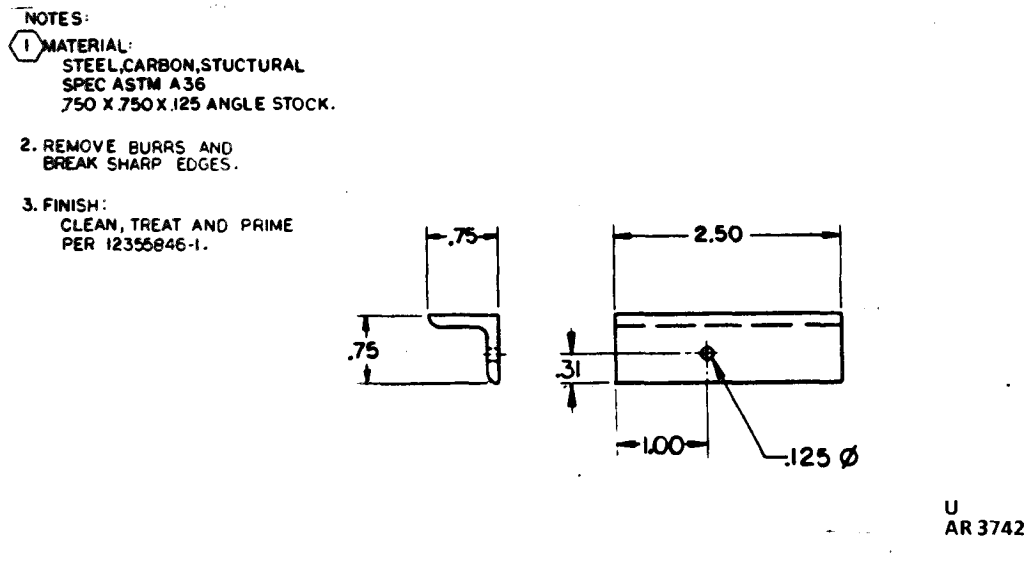

Figure 11. Angle - safety plate support (view E-E).

j. Weld larger safety plate support angle to frame in accordance with Figures 8 and 12.

NOTE

This angle is welded just to frame in a vertical orientation.

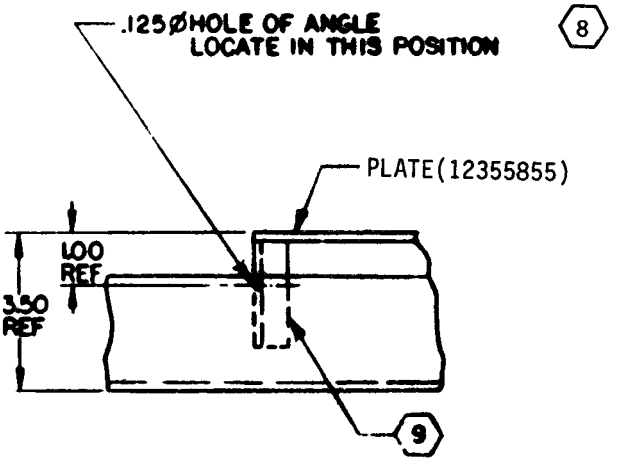

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Figure 12. Safety plate support (view E-E)

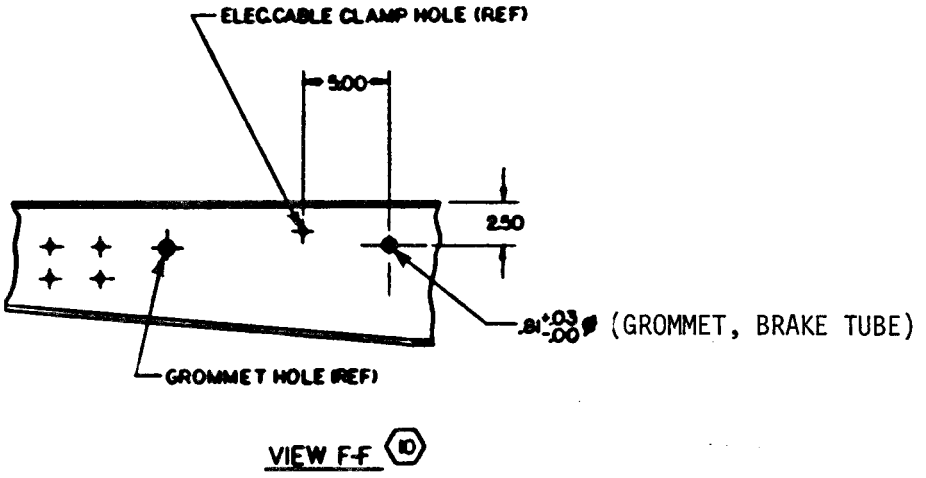

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Figure 13. Crossmember (view F-F).

k. Cut and drill safety tread plate in accordance with Figure 15.

l. Using screws and washers per Table 3, position and secure safety plate, Figure 15, to frame, Figure 6.

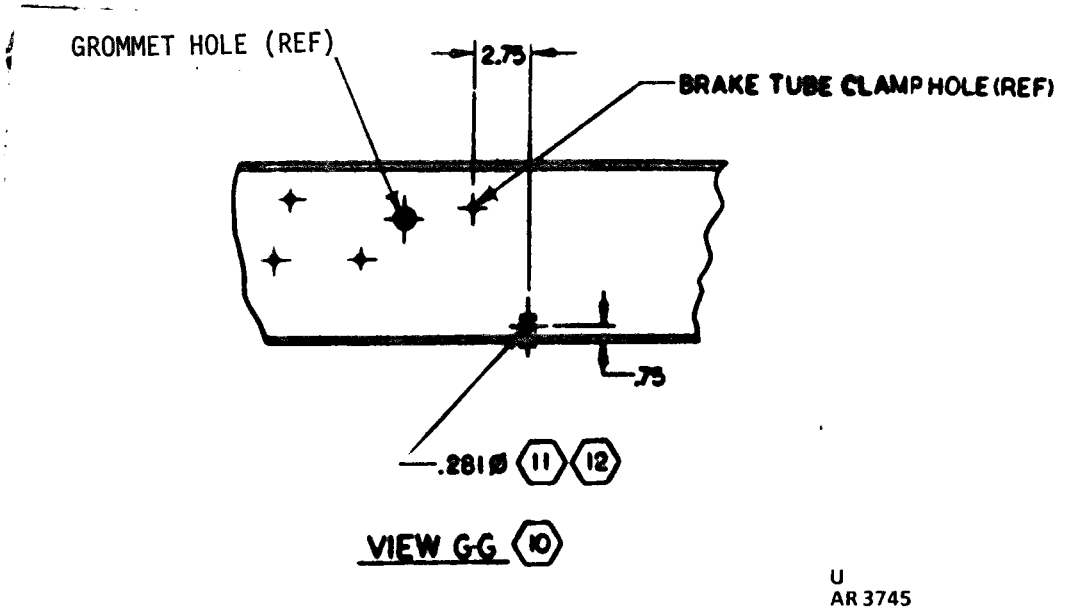


Figure 14. Crossmember (view G-G).

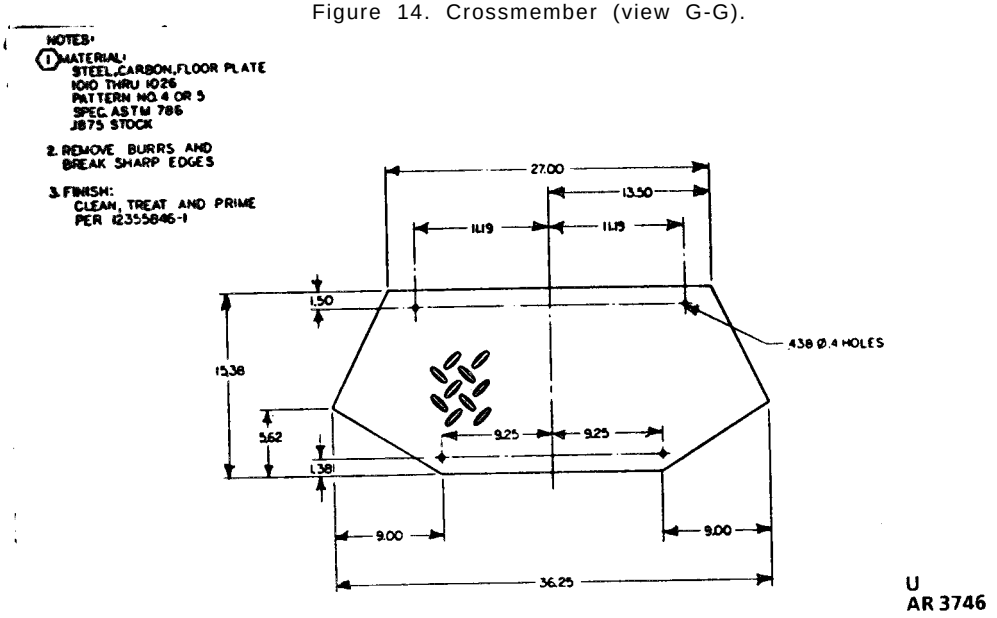
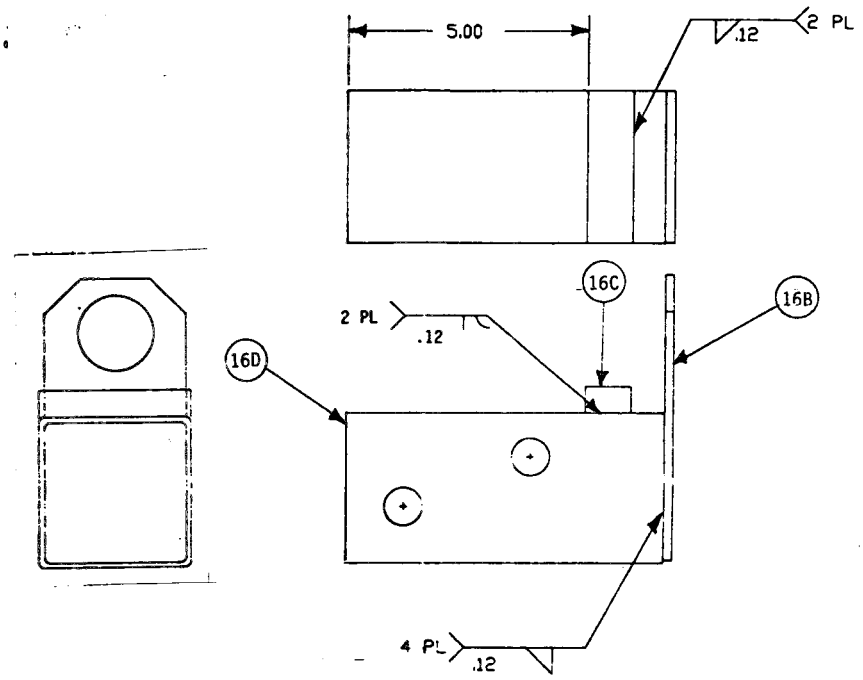
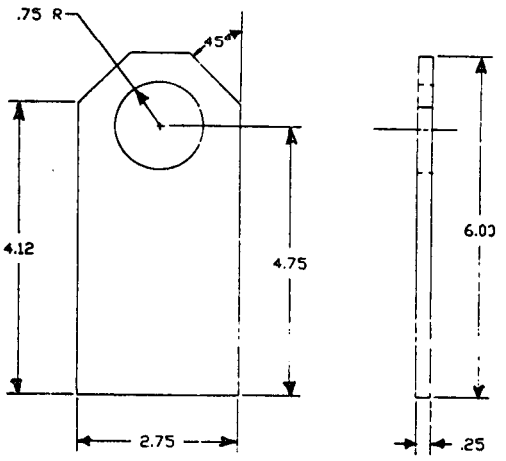


Figure 15. Safety tread plate

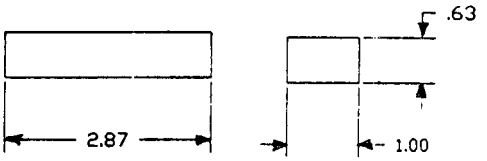
m. Cut, stock, and make rear bracket assemble in accordance with Figure 16.



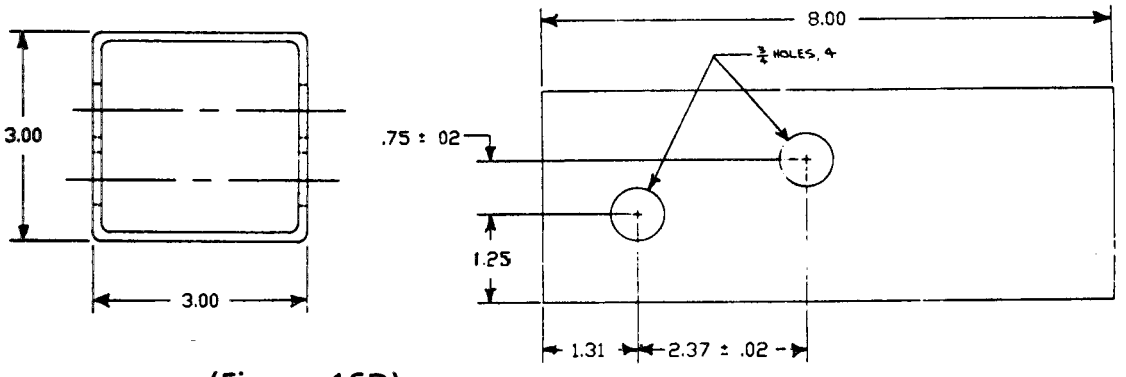
(Figure 16A)



(Figure 16B)



(Figure 16 C)



(Figure 16D)

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Figure 16. Rear bracket assembly (view 1).

n. Using same bolts, pin holes, and pins from disassembly of rear step jack, Figure 2, assemble rear bracket assembly to frame (fig. 17).

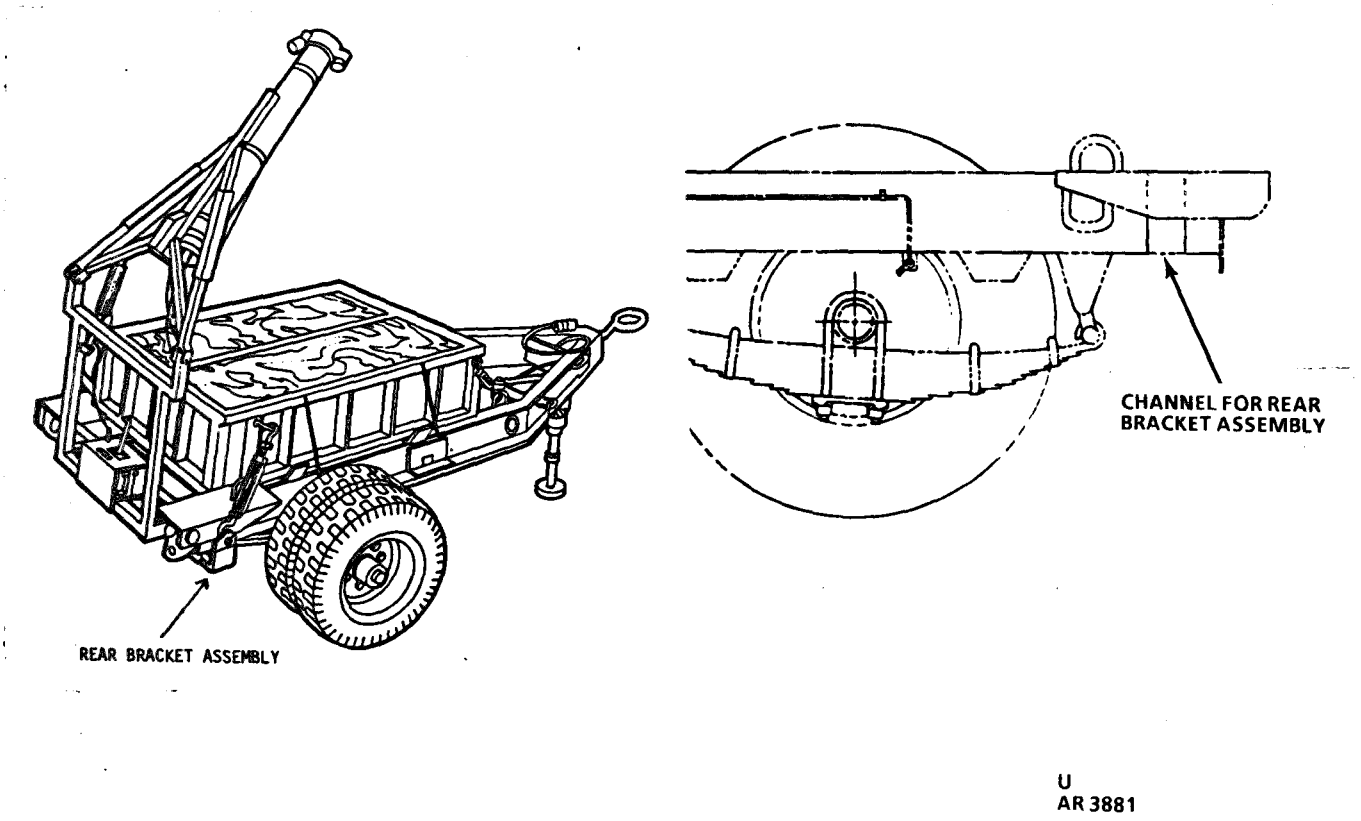

Figure 17. Rear bracket assembly (view 2).

TABLE 1

INSTRUCTION CODES AND NOTES FOR MODIFICATION ITEMS FOR THE M200A1 TRAILER

1. ALL ITEMS MARKED * ARE INCLUDED WITH THE MISSION MODIFICATION COMPONENTS (TABLES 2 and 3). THEY WILL BE REMOVED AND DISCARDED UPON COMPLETION OF THE MISSION. ALL ITEMS MARKED △ ARE TO BE REMOVED AND REUSED WITH THE MISSION MODIFICATION COMPONENTS. THEY WILL BE INSTALLED IN THE ORIGINAL CONFIGURATION UPON COMPLETION OF THE MISSION. ALL ITEMS MARKED Θ ARE REMOVED AND RETAINED IN STORAGE UNTIL COMPLETION OF THE MISSION. AT THAT TIME THEY WILL BE REINSTALLED TO BRING THE VEHICLE BACK TO ITS ORIGINAL CONFIGURATION.
   ITEMS MARKED # ARE PARTS OF THE NYLON TUBE FROM THE VALVE TO THE AIR RESERVOIR. IN ORDER TO REMOVE THE TUBE FORM THE GROMMET HOLE THE TUBE SHOULD BE CUT AND DISCARDED. UPON COMPLETION OF THE MISSION USE COMPONENTS INCLUDED WITH MISSION MODIFICATION COMPONENTS 12355884 MARKED * * TO BE REINSTALLED TO BRING THE VEHICLE BACK TO ITS ORIGINAL CONFIGURATION.

2. THESE INSTALLATION INSTRUCTIONS ARE FOR USE WITH THE MICLIC MISSION MODIFICATION COMPONENTS.

(3.) SEE VIEW A-A, FIGURE 5, (CROSSMEMBER 8699473) FOR HOLE LOCATION OF MOUNTING BRACKET ASSY. 12355857 AND (2) GROMMET MS35489-101

(4.) SEE VIEW B-B, FIGURE 7, (CROSSMEMBER 8699468) FOR HOLE LOCATION OF MOUNTING BRACKET 8357982. SUPPORT 10931736. GROMMET MS 35489-101 AND CLAMP MS21333-34.

(5.) SEE VIEW C-C, FIGURE 8, (A-FRAME) FOR HOLE LOCATION OF PLATE 12355855 AND CLAMP MS21333-100 AND ALSO FOR LOCATIONS OF (2) NUT MS51967-8, (2) ANGLE 12355856 AND ANGLE 12355902.

(6.) PROTECT EXISTING TOW NYLON TUBES TO PREVENT DAMAGE FROM WELDING ANGLE 12355902.

(7.) IMOUNT TWO ANGLES 12355856 ON PLATE 12355855 TO LOCATE ANGLE TO CHANNEL AND THEN WELD.

(8.) THIS HOLE IS TO HOOK EXTENSION SPRING OF ELECTRICAL CABLE.

(9.) ANGLE 12355902 MUST BE IN CONTACT WITH AND FLUSH WITH EDGE SHOWN ON PLATE 12355855 BEFORE WELDING.

(10.) SEE VIEW F-F, FIGURE 13, AND VIEW G-G, FIGURE 14, (LEFT CHANNEL 8699460) FOR HOLE LOCATION OF GROMMET MS35489-101 AND CLAMP MS21333-102.

(11.) ADD .281 Ø HOLE TO CHANNEL IF HOLE DOES NOT EXIST.

(12.) MOUNT TUBE CLAMP MS21333-102 AS SHOWN.

(13.) ALL HOLES MARKED ● ARE THE EXISTING HOLES.

14. FOR UNPAINTED PARTS:
    CLEAN, TREAT AND PRIME PER 12355846-1
    TOPCOAT PER 12355846-100.

15. FOR TOUCH UP AND REPAIR:
    FINISH PER 12355846-400.

16. WELD PER MIL-STD-1261, CLASS 2.

17. ALL WELD SIZES ARE MINIMUM.

TABLE 2
LIST OF STOCK/LOCALLY FABRICATED ITEMS REQUIRED FOR M200A1 TRAILER MODIFICATION

ITEM DESCRIPTION	QTY	DWC/PART NUMBER	FSCM	STOCK NSN
1. BRACKET ASSY. TANK MTG	1	12355857	19207	
		12355859	19207	
1a. GUSSET, BRACKET	2	ASTM A36/A283	81346	9515-01-083-9663
		12355858	19207	or, 9515-00-596-1906
1b. ANGLE BRACKET	1	ASTM A36/A283	81346	or, 9515-00-596-2442
2. REAR BRACKET ASSY	1	12355967	97403	
2a. TIEDOWN	1	ASTM A36	81346	(ANY OF BRACKET ASSY NSNs)
2b. BASE	1	ASTM A36	81346	4710-01-016-7403
				9510-00-969-5226
2c. SUPPORT	1	ASTM A36	81346	or, 9510-00-955-9273
				or, 9510-00-954-7629
		12355855	19207	9515-00-289-6981
3. PLATE, SAFETY TREAD	1	ASTM A786	81346	or, 9515-00-187-3957
3a. PLATE, FLOOR				or, 9515-00-067-3989
				or, 9515-00-963-5142
4. ANGLE SAFETY PLATE SUPPORT	2	12355856-1	19207	9520-00-052-5367
4a. ANGLE, STRUCTUAL		ASTM A36	81346	or, 9520-00-277-4913
5. ANGLE SAFETY PLATE SUPPORT	1	12355902	19207	9520-00-203-1819
5a. ANGLE, STRUCTUAL		ASTM A36	81346	or, 9520-00-277-5983
6. TUBE NONMETALLIC 54 in.	1	CPR104420-3	19207	4720-01-003-6706
7. TUBE, NONMETAIC 18 in	1	CPR104420-3	19207	4720-01-003-6706
8. TUBE, NONMETALLIC 23 in.	1	CPR104420-2	19207	4720-01-014-4915
9. TUBE METAI LIC	1	12355852	19207	
10. TUBE,METALLIC	1	12355853	19027	
		MIL-T-3520	81349	4710-00-541-6887
		MIL-T-3520	81349	4710-00-595-1824
		ASTM A519	81346	4710-00-971-4187
		ASTM A519	81346	4710-00-978-7015

TABLE 3
LIST OF ACCESSORIES REQUIRED
FOR M200A1 TRAILER

ITEM DESCRIPTION	PART NO.	FSCM	NSN	QTY
1. ELBOW	MS39182-3	96906	4730-00-069-1187	1
2. UNION	CNEX1	19207	4730-00-288-9390	1
3. NUT	MS39196-3	96906	4730-00-069-1187	1
4. NUT	MS39196-4	96906	4730-00-054-2572	4
5. SLEEVE	MS39197-3	96906	4730-00-293-7108	1
6. SLEEVE	MS39197-4	96906	4730-00-054-2571	4
7. INSERT	CPR102321-1	19207	4730-01-079-8821	2
8. INSERT	CPR102321-4	19207	4730-01-032-6038	4
9. GROMMET	MS35489-101	96906	5325-00-276-6051	1
10. CLAMP	MS21333-34	96906	5340-00-282-7519	1
11. CLAMP	MS21333-100	96906	5340-00-809-1492	1
12. CLAMP	MS21333-102	96906	5340-00-984-8540	1
13. SCREW	MS90727-62	96906	5305-00-269-3238	4
14. SCREW	MS90725-60	96906	5305-00-269-3211	4
15. SCREW	MS35206-281	96906	5305-00-988-1725	3
16. NUT	MS51922-21	96906	5310-00-959-1488	4
17. NUT	MS51967-8	96906	5310-00-732-0558	2
18. NUT	MS51967-2	96906	5310-00-761-6882	3
19. WASHER	MS27183-14	96906	5310-00-080-6004	8
20. WASHER	MS35338-46	96906	5310-00-637-9541	4
21. WASHER	MS35338-44	96906	5310-00-582-5965	3
22. NUT	MS51874-4	96906	4730-00-013-7397	4

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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 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 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 milliliters = .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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