

FINAL REPORT
MAY 1995

REPORT NO. 93-19

DOUBLE SECONDARY STEEL
CONTAINERS (SSCs) FOR
STORAGE OF LEAKING
M55 CHEMICAL ROCKETS

DISTRIBUTION STATEMENT H
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Prepared for:
U.S. Army Armament, Munitions
and Chemical Command
ATTN: AMSMC-DSD-AS
Rock Island, IL 61299-6000

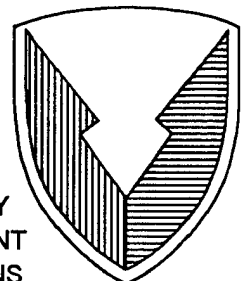
Distribution Unlimited



EXERCISE QUALITY ASSURANCE



VALIDATION ENGINEERING DIVISION
SAVANNA, ILLINOIS 61074-9639



U.S. ARMY
ARMAMENT
MUNITIONS
CHEMICAL COMMAND

U.S. ARMY DEFENSE AMMUNITION
CENTER AND SCHOOL

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19. ABSTRACT <i>(Continue on reverse if necessary and identify by block number)</i> <p>The U.S. Army Defense Ammunition Center and School (USADACS), Validation Engineering Division (SMCAC-DEV), was tasked by U.S. Army Armament, Munitions and Chemical Command (AMCCOM) to perform leak integrity tests on two SSCs joined together. These tests were conducted following modification of the SSC flanges so the two units could be joined together. These modified SSCs will be used as a second overpack for leaking M55 chemical rockets. This report contains results of the tests conducted.</p>					
20. DISTRIBUTION / AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS			21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED		
22a. NAME OF RESPONSIBLE INDIVIDUAL JEROME H. KROHN		22b. TELEPHONE <i>(Include Area Code)</i> 815-273-8929		22c. OFFICE SYMBOL SMCAC-DEV	

U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL
VALIDATION ENGINEERING DIVISION
SAVANNA, IL 61074-9639

REPORT NO. 93-19

DOUBLE SECONDARY STEEL CONTAINERS (SSCs) FOR STORAGE OF
LEAKING M55 CHEMICAL ROCKETS

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PART 1

INTRODUCTION

A. BACKGROUND. The U.S. Army Defense Ammunition Center and School (USADACS), Validation Engineering Division (SMCAC-DEV), was tasked by U.S. Army Armament, Munitions and Chemical Command (AMCCOM) to perform leak integrity tests on two SSCs joined together. These tests were conducted following modification of the SSC flanges so the two units could be joined together. This approach was taken so multiple M55 rockets could be overpacked at one time versus the current procedure of Single Round Containers (SRCs) for each rocket. This container will not be used to overpack M55 rockets that are not already in a first overpack.

B. AUTHORITY. This program was conducted IAW mission responsibilities delegated by the U.S. Army Armament, Munitions and Chemical Command (AMCCOM), Rock Island, IL.

C. OBJECTIVE. The objective of these tests was to verify that the SSCs, following modification, could still maintain their leak integrity and be used as chemical storage overpack containers.

D. CONCLUSION. All modified double SSCs had no detectable leaks in the 1×10^{-6} cc/he/sec/1.5 psi leak rate ranges with the exception of three containers (serial numbers 3117, 2544, and 3437), which had leak rates of 4×10^{-6} cc/he/sec/1.5 psi, 2×10^{-6} cc/he/sec/1.5 psi, and 2×10^{-6} cc/he/sec/1.5 psi, respectively. The maximum sensitivity of the tests conducted was 1×10^{-6} cc/he/sec/1.5 psi. All containers passed leak rate requirements for depot chemical storage containers.

PART 2

30 NOVEMBER - 1 DECEMBER 1994

ATTENDEES

William R. Meyer
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815-273-8090

Director
U.S. Army Defense Ammunition Center
and School
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Savanna, IL 61074-9639

Bradley J. Haas
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Director
U.S. Army Defense Ammunition Center
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Savanna, IL 61074-9639

PART 3

TEST PROCEDURE

Helium-leak tests were performed at 1.5 +/- 0.5 psi with the use of a mass spectrometer and a sampling probe (referred to as the helium quick test). This test method has a maximum sensitivity of 1×10^{-6} cc/he/sec/1.5psi and was used due to the large physical size of the items being tested.

PART 4

TEST ITEM

Two SSCs Joined Together

- | | |
|----------------------------|----------------|
| a. Height: | 48.0 inches |
| b. Width: | 33.3 inches |
| c. Length: | 84.5 inches |
| d. Gasket: | butyl rubber |
| e. Torque on Flange Bolts: | 30 ft-lbs. |
| f. Total Tested: | 63 double SSCs |

PART 5

TEST RESULTS

A total of 63 double SSCs joined together were tested following modification. With the exception of three SSCs joined together (serial numbers 3117, 2544, and 3437), all containers had no detectable leaks. The three SSCs that did leak had leak rates of 4×10^{-6} cc/he/sec/1.5 psi, 2×10^{-6} cc/he/sec/1.5 psi, and 2×10^{-6} cc/he/sec/1.5 psi, respectively. It should be noted that the maximum sensitivity of the tests conducted was 1×10^{-6} cc/he/sec/1.5 psi; therefore, the true leak rate for all but the three containers listed above is not known. Table 1 below lists the serial number and leak rate for each container.

Table 1
Helium Leak Tests
Double SSC's

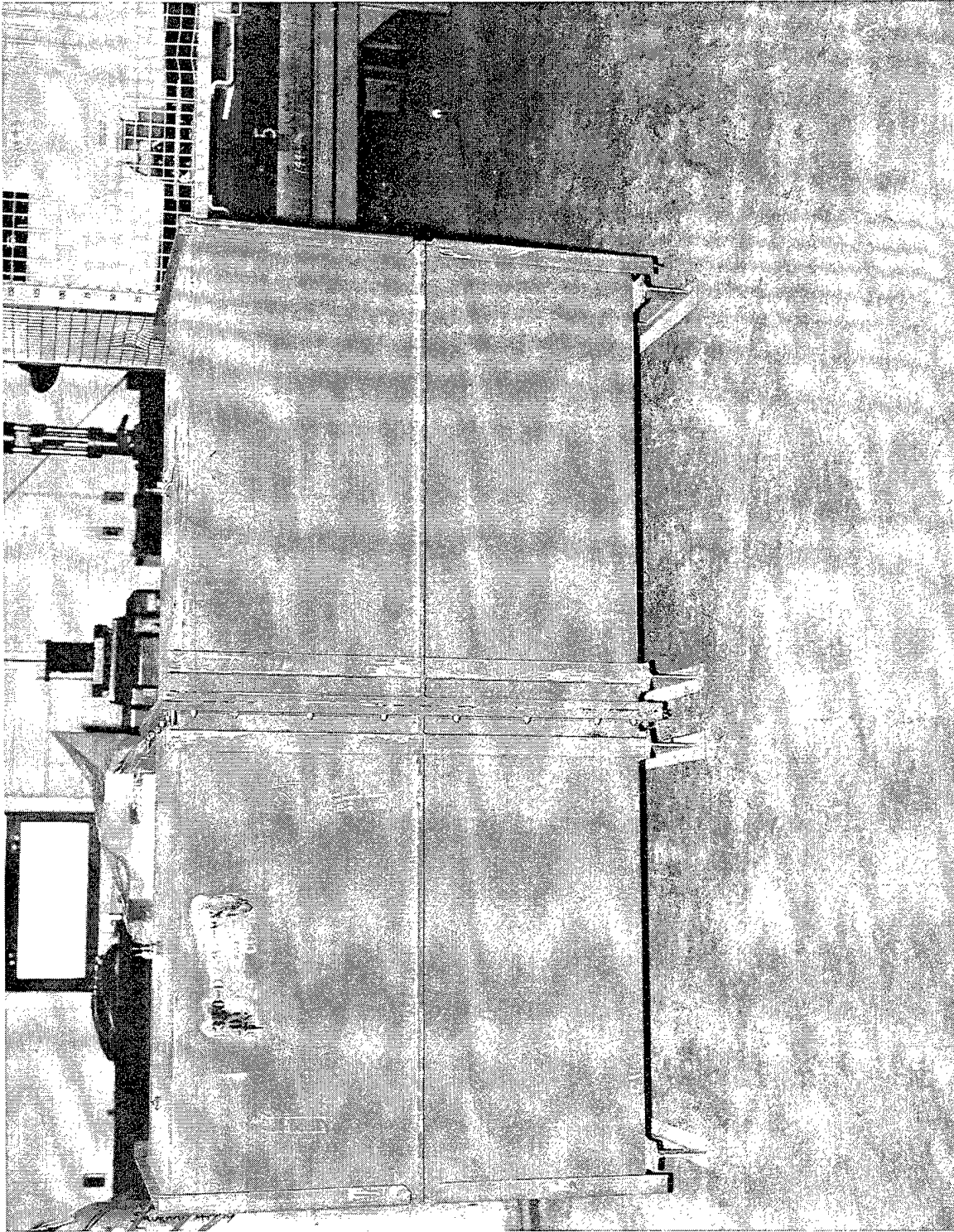
<u>SSC Serial Number</u>	<u>Leak Rate cc/he/sec/1.5psi</u>
0099	$<1 \times 10^{-6}$
0176	$<1 \times 10^{-6}$
0195	$<1 \times 10^{-6}$
0217	$<1 \times 10^{-6}$
0224	$<1 \times 10^{-6}$
0283	$<1 \times 10^{-6}$
0309	$<1 \times 10^{-6}$
0571	$<1 \times 10^{-6}$
0000	$<1 \times 10^{-6}$
0581	$<1 \times 10^{-6}$
0683	$<1 \times 10^{-6}$

<u>SSC</u> <u>Serial Number</u>	<u>Leak Rate</u> <u>cc/he/sec/1.5psi</u>
0810	<1 X 10 ⁻⁶
0816	<1 X 10 ⁻⁶
0823	<1 X 10 ⁻⁶
0859	<1 X 10 ⁻⁶
1022	<1 X 10 ⁻⁶
1229	<1 X 10 ⁻⁶
1300	<1 X 10 ⁻⁶
1306	<1 X 10 ⁻⁶
1330	<1 X 10 ⁻⁶
1421	<1 X 10 ⁻⁶
1440	<1 X 10 ⁻⁶
1498	<1 X 10 ⁻⁶
1500	<1 X 10 ⁻⁶
1510	<1 X 10 ⁻⁶
1525	<1 X 10 ⁻⁶
1687	<1 X 10 ⁻⁶
1702	<1 X 10 ⁻⁶
1731	<1 X 10 ⁻⁶
1746	<1 X 10 ⁻⁶
1850	<1 X 10 ⁻⁶
1963	<1 X 10 ⁻⁶
1999	<1 X 10 ⁻⁶
2379	<1 X 10 ⁻⁶
2544	2 X 10 ⁻⁶
2571	<1 X 10 ⁻⁶
2583	<1 X 10 ⁻⁶
0000	<1 X 10 ⁻⁶

<u>SSC Serial Number</u>	<u>Leak Rate cc/he/sec/1.5psi</u>
2587	<1 X 10 ⁻⁶
2595	<1 X 10 ⁻⁶
2612	<1 X 10 ⁻⁶
2690	<1 X 10 ⁻⁶
2718	<1 X 10 ⁻⁶
2745	<1 X 10 ⁻⁶
2746	<1 X 10 ⁻⁶
2749	<1 X 10 ⁻⁶
2993	<1 X 10 ⁻⁶
0000	<1 X 10 ⁻⁶
2821	<1 X 10 ⁻⁶
2830	<1 X 10 ⁻⁶
2918	<1 X 10 ⁻⁶
3037	<1 X 10 ⁻⁶
3063	<1 X 10 ⁻⁶
3068	<1 X 10 ⁻⁶
3117	4 X 10 ⁻⁶
3135	<1 X 10 ⁻⁶
0000	<1 X 10 ⁻⁶
3215	<1 X 10 ⁻⁶
3270	<1 X 10 ⁻⁶
3423	<1 X 10 ⁻⁶
3437	2 X 10 ⁻⁶
4070	<1 X 10 ⁻⁶
4095	<1 X 10 ⁻⁶
6060	<1 X 10 ⁻⁶

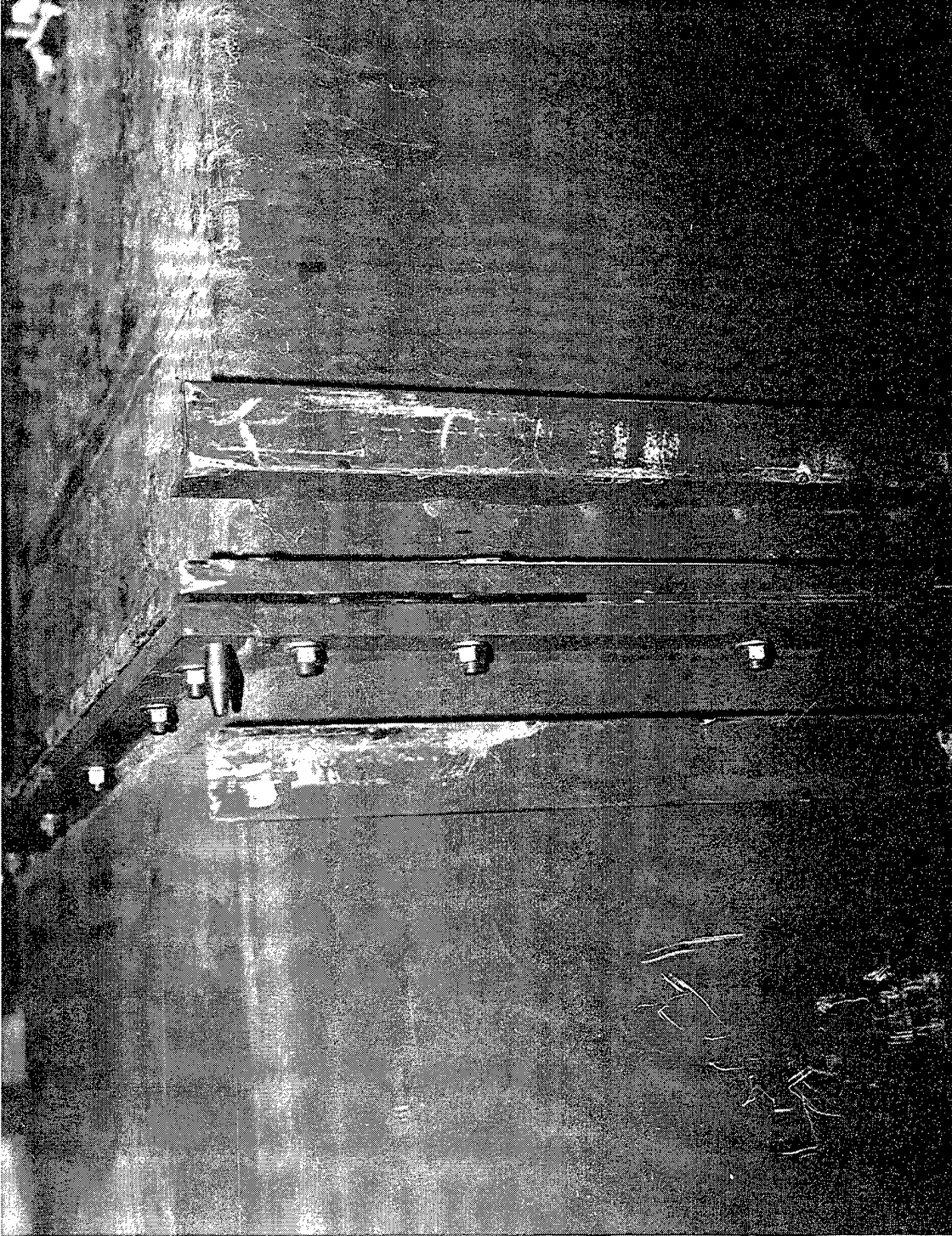
PART 6

PHOTOGRAPHS



U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL -
SAVANNA, IL

PHOTO NO. SCN95-122-1296: This photo shows the side view of a double SSC.



	U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL - SAVANNA, IL	
PHOTO NO. SCN95-122-1297: This photo is a close up of the top flange and corner. Note guide pin for aligning SSC flanges during the joining process.		

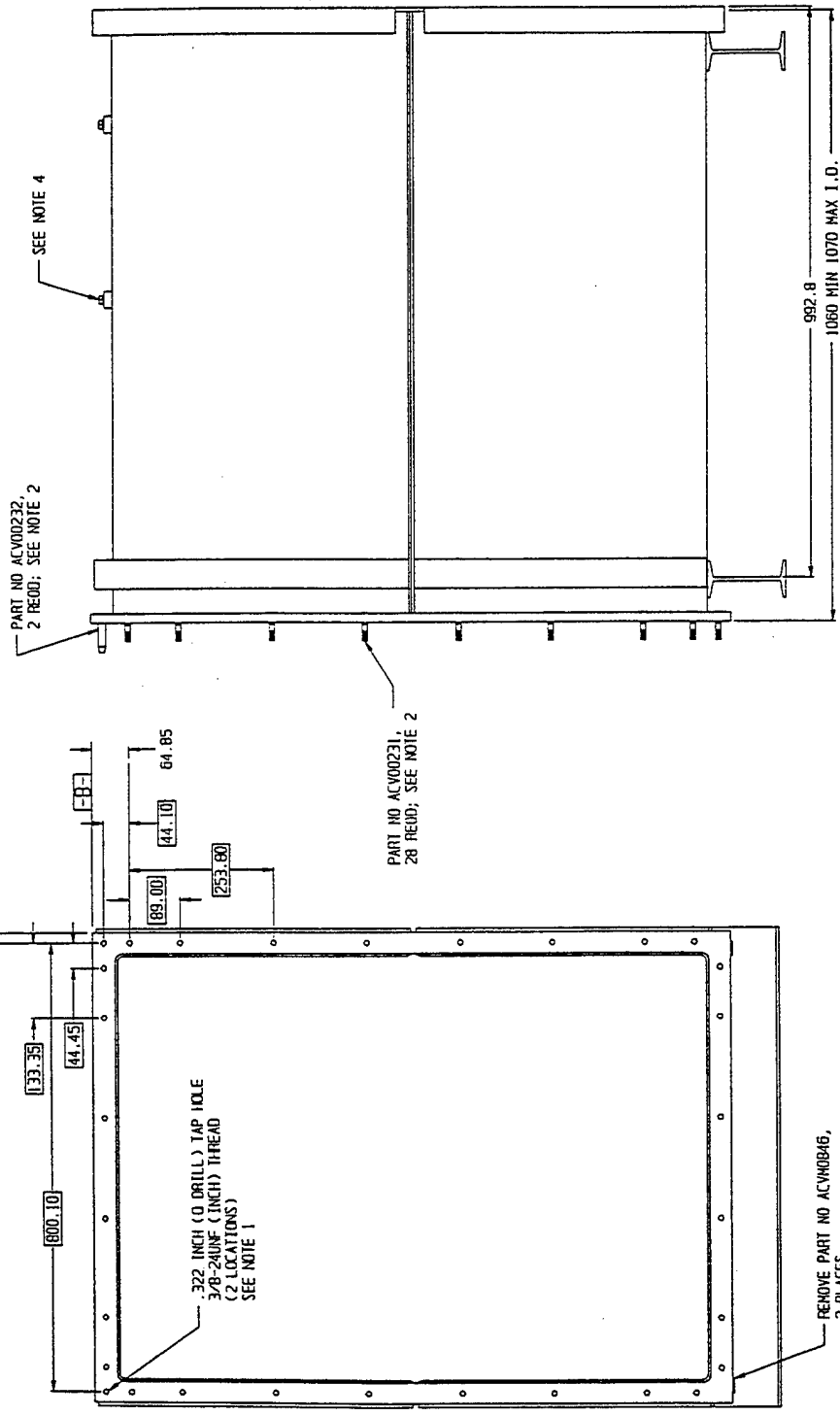
PART 7

DRAWINGS

REV	DESCRIPTION	DATE	APPROVED
1	RELEASED FOR PRODUCTION	04-03-04	SPRAGUE
2	TAP HOLE IS INCH DIMENSION	04-03-16	

4. REMOVE 'SWAGELOK' AND RETAIN FOR FUTURE USE. REPLACE WITH 1/4-18 PLUG, PIPE-SQUARE HEAD, IRON OR STEEL, ZINC COATED. SEAL THE PLUG WITH ANTISETZE (TEFLON) TAPE, MIL-1-27730. WRAP TAPE 1-1/2 TO 2 TIMES AROUND THREADS CLOCKWISE LOOKING AT PLUG END. INSTALL PLUG AND TORQUE TO 50-75 INCH-POUNDS.

NOTES:
 1. ADD A DRILL & TAP HOLE AT EACH TOP CORNER FOR ALIGNMENT PIN. PART NO ACV00232. LOCATION IS BY GEOMETRIC TOLERANCE IN HILLIETERS.
 2. USE 'LOCK-TITE' PERMANENT THREAD LOCKER 262 ON ALL STUD ENDS AND ALIGNMENT PINS.
 3. SEE DRAWING ACV00845, SHEET 1 OF 3, FOR ADDITIONAL GEOMETRIC TOLERANCE. DURING ORIGINAL PRODUCTION, HOLE WERE DRILLED AND TAPED INTO INDIVIDUAL STEEL STRIPS BEFORE WELDING SHOWN AT SHEET 2 OF 3, DWG ACV00845.



PART NO. ACV0230-2
 ALTERED ITEM DRAWING

DATE	DESIGNER	CHECKER	DATE	DESIGN ACTIVITY
04-01-10	SPRAGUE			U.S. ARMY APPROVED FOR PRODUCTION SILVER SPRING, MARYLAND SILVER SPRING, MARYLAND SILVER SPRING, MARYLAND
	WILLIAM F. ERNST			SECONDARY STEEL CONTAINER, COUPLED
	WILLIAM F. ERNST			SIZE
				D 28620
				SCALE 1/4"
				SHEET 2 OF 4

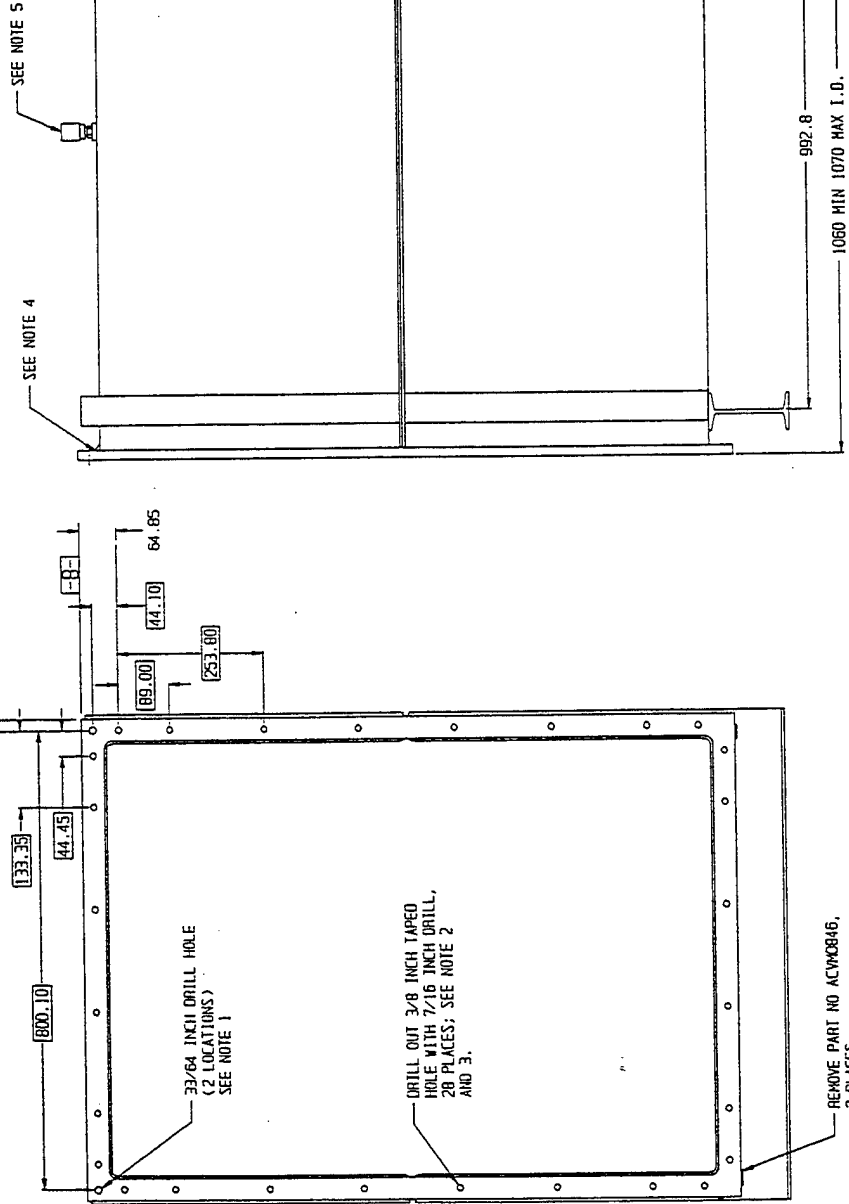
ALTERED ITEM IS PART NO ACV00840

DISTRIBUTION STATEMENT A, UNLIMITED

REV	DESCRIPTION	DATE	APPROVED
1	RELEASED FOR PRODUCTION	94-03-04	SPRAGUE
X1	CHANGE DRILL HOLE TO 33/64"	94-03-16	

- THE ORIGINAL WELD ON THE BACK SIDE OF THE FLANGE MAY EXTEND INTO THE SEAT AREA OF THE FLANGED NUT. THE NUT FLANGE DIAMETER IS ESTIMATED AT .82 INCHES. ALL HOLES MUST BE CHECKED FOR INTERFERENCE. IF INTERFERENCE EXISTS, USE SPOTTING TOOL TO REMOVE INTERFERING WELD (CLEAN-UP). THE "SWAGELOK" SHOULD BE CAPPED WITH A CAPPLUG, PART NO 15/16 SC, IF MISSING.

- 100 A 1/2 INCH DRILL HOLE AT EACH TOP CORNER FOR ALIGNMENT PIN, PART NO. ACVM0232. LOCATION IS BY GEOMETRIC TOLERANCE IN MILLIMETERS. SEE DRAWING ACVM0845, SHEET 1 OF 3, FOR ADDITIONAL GEOMETRIC TOLERANCE.
- DURING ORIGINAL PRODUCTION, HOLES WERE DRILLED AND TAPED INTO INDIVIDUAL STEEL STRIPS BEFORE WELDING STRIPS AT SHEET 2 OF 3.
- SEE DETAIL 1, DWG ACVM0230, SHEET 1 OF 4, FOR MARKING OF COUPLED CONTAINERS. DURING MODIFICATION, ALL MATCHED CONTAINERS ARE TO BE INITIAL ASSEMBLED TO INSURE ALIGNMENT OF ALL HOLES WITH STUDS AND ALIGNMENT PINS.



PART NO. ACVM0230-3
ALTERED ITEM DRAWING

DATE	BY	CHKD BY	APP'D BY	DESIGN ACTIVITY
94-01-10	SPRAGUE	SPRAGUE	SPRAGUE	APPROVED, MANUFACTURE AND OPERATIONAL CONTROL DEPARTMENT, MILITARY CENTER AND SCHOOL, FORT MONROE, VIRGINIA 23060-5000
	WILLIAM F ERNST	WILLIAM F ERNST	WILLIAM F ERNST	SECONDARY STEEL CONTAINER, COUPLED
	WILLIAM F ERNST	WILLIAM F ERNST	WILLIAM F ERNST	

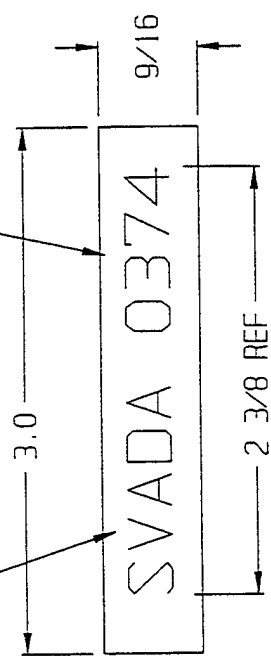
ITEM NO.	DESCRIPTION	QTY	UNIT	SCALE
1	SECONDARY STEEL CONTAINER, COUPLED	1	EA	1/4"

ALTERED ITEM IS PART NO ACVM0840

REVISION		DATE	APPROVED
LTR	DESCRIPTION		
-	RELEASED FOR PRODUCTION	94-03-04	SPRAGUE

NOTES:
 1. MATERIAL: 12 GA (.1046) HOT OR COLD ROLLED SHEET STEEL.
 2. SERIAL NUMBER "SVADA XXXX" SHALL BE APPLIED BY METAL STAMP
 1/4 INCH HIGH TO A DEPTH THAT WILL BE LEGIBLE AFTER PAINTING.

INDICATES THE DEPOT DOING THE MODIFICATION



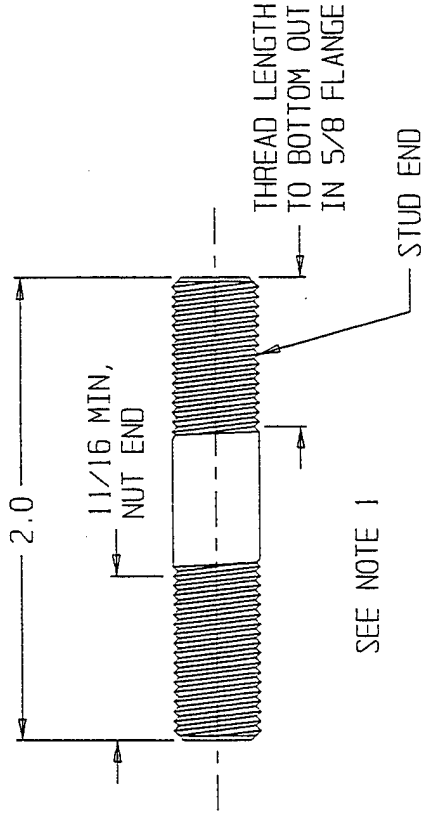
THE NUMERIC NUMBER TO BE THE SAME AS THE NUMBER APPEARING ON MATCHED PART NO ACVM0230-2

PART NO ACVM0230-4

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES. BREAK SHARP CORNERS AND EDGES.		DATE		DESIGN ACTIVITY	
TOLERANCES ON		94-01-10		U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND DEFENSE AMMUNITION CENTER AND SCHOOL SAVANNA, ILLINOIS 61074-9639	
FRACTIONS ± 1/16		DTPSM	CHECKER	PROJ ENGR	
DECIMALS ±		DIW		SPRAGUE	
ANGLES ±		SPECIAL-DRAWN		JHK THOMAS J MICHELS CHIEF, SUPPLY ENGINEERING DIV	
MATERIAL		SUBMITTED		SECONDARY STEEL CONTAINER, COUPLED	
ACVM0230-3		CHIEF, LOGISTICS ENGINEERING OFFICE		SIZE	CAGE CODE
NEXT ASSY		WILLIAM F ERNST		B	28620
USED ON		ASSIGNED BY: SVADA (CONTRACTOR) GENERAL, U.S. ARMY MATERIAL COMMAND (AMC)		SCALE	1-1/2
APPLICATION		WILLIAM F ERNST		UNIT WT	SHEET 4 OF 4
DISTRIBUTION STATEMENT A, UNLIMITED		U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL			

NOTES:

- 3/8-24 UNF X 2 INCH LENGTH, RIGHT HAND THREAD LENGTHS AS SHOWN, GRADE 8 (150,000 PSI MINIMUM TENSILE STRENGTH), PER SAE J429, CADMIUM PLATED PER QQ-P-416, TYPE II CLASS 2 THREAD.



PART NO ACV00231-1

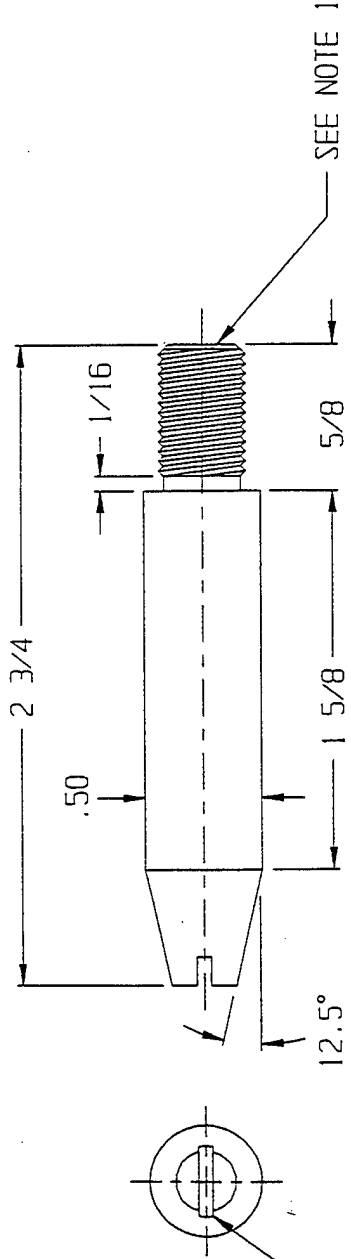
REVISION		DATE	APPROVED
LTR	DESCRIPTION		
-	RELEASED FOR PRODUCTION	94-03-04	SPRAGUE
XA	CORRECT SPELLING ERROR	94-03-08	

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES. BREAK SHARP CORNERS AND EDGES.		DATE 94-01-10 CHECKER PROJ ENGR SPRAGUE	DESIGN ACTIVITY U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND DEFENSE AMMUNITION CENTER AND SCHOOL SAVANNA, ILLINOIS 61074-9639
TOLERANCES ON FRACTIONS ± 1/16 DECIMALS ± .005 ANGLES ±	SPEC'D BY JHK THOMAS J MICHELS CHIEF, SUPPLY ENGINEERING DIV	SUBMITTED WILLIAM F ERNST CHIEF, LOGISTICS ENGINEERING OFFICE APPROVED BY ORDER OF GENERAL, U.S. ARMY AMMUNITION COMMAND (AMC)	STUD, 3/8-24UNF, SECONDARY STEEL CONTAINER, COUPLED
MATERIAL		WILLIAM F ERNST	SIZE B CAGE CODE 28620
ACV0230-2			SCALE 2 UNIT WT
NEXT ASSY			SHEET 1 OF 1
USED ON			
APPLICATION			

DISTRIBUTION STATEMENT A,
UNLIMITED

NOTES:

- 3/8-24 UNF, RIGHT HAND THREAD.
- MATERIAL: 1045, MEDIUM CARBON, COLD FINISH ROUND BAR STOCK.



SCREW DRIVER SLOT,
1/16 X 1/8 DEEP

PART NO ACV00232-1

REVISION		
LTR	DESCRIPTION	DATE
-	RELEASED FOR PRODUCTION	94-03-04
XA	CORRECT SPELLING ERRORS	94-03-08
XB	CHANGED DIAMETER TO .50	94-03-16

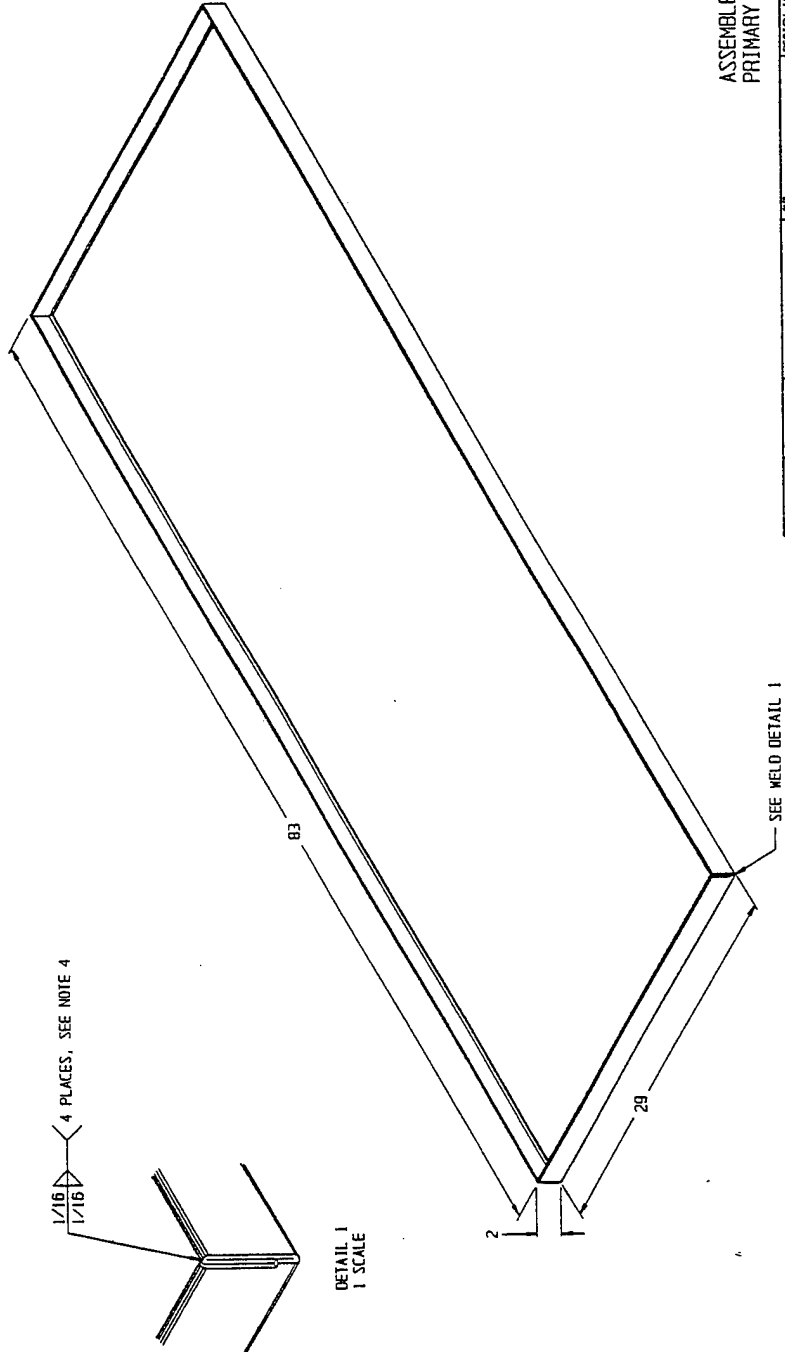
UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES. SHARP CORNERS AND EDGES.		BREAK
TOLERANCES ON		
FRACTIONS	± 1/16	
DECIMALS	± .005	
ANGLES	± 1°	
MATERIAL		
ACV00230-2	NEXT ASSY	USED ON
APPLICATION		

DISTRIBUTION STATEMENT A,
UNLIMITED

DATE	94-01-10	DESIGN ACTIVITY	U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND DEFENSE AMMUNITION CENTER AND SCHOOL SAVANNAH, ILLINOIS 61074-9639
DTSYH	DIW	CHECKER	PROJECT ENGINEER
			SPRAGUE
SUBMITTED	JHK THOMAS J MICHELS CHIEF, SUPPLY ENGINEERING DIV		ALIGNMENT PIN, 3/8-24UNF, SECONDARY STEEL CONTAINER, COUPLED
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND (AMC)	WILLIAM F ERNST CHIEF, LOGISTICS ENGINEERING OFFICE	SIZE	CAGE CODE
	WILLIAM F ERNST	B	28620
		SCALE	UNIT WT
		2	
			ACV00232
			SHEET 1 OF 1

LTN	DESCRIPTION	REVISION	DATE	APPROVER
-	RELEASED FOR PRODUCTION		94-03-04	SPRAGUE

- NOTES:
1. REFER TO APPROPRIATE DRAWING FOR USE OF PAN WITH TOXIC CHEMICAL MUNITIONS.
 2. REFERENCE DIMENSIONS ARE SHOWN. REFER TO SHEET 4 OF 4 FOR FINISHED TOLERANCES.
 3. SEE SHEET 2 OF 4 FOR FLAT DIMENSIONS AND FORMING.
 4. THE CORNERS ARE TO BE FULL WELDED AT ALL JUNCTIONS INSIDE AND OUT TO ACHIEVE "NO LEAKS" (WATER TEST).
 5. EITHER DESIGN FABRICATION IS ACCEPTABLE; SINGLE PIECE OR THREE PIECE.
 6. ESTIMATED WEIGHT OF THE PAN IS 67 POUNDS.



ASSEMBLED PART NO ACV00235-1
PRIMARY DESIGN; SINGLE PIECE

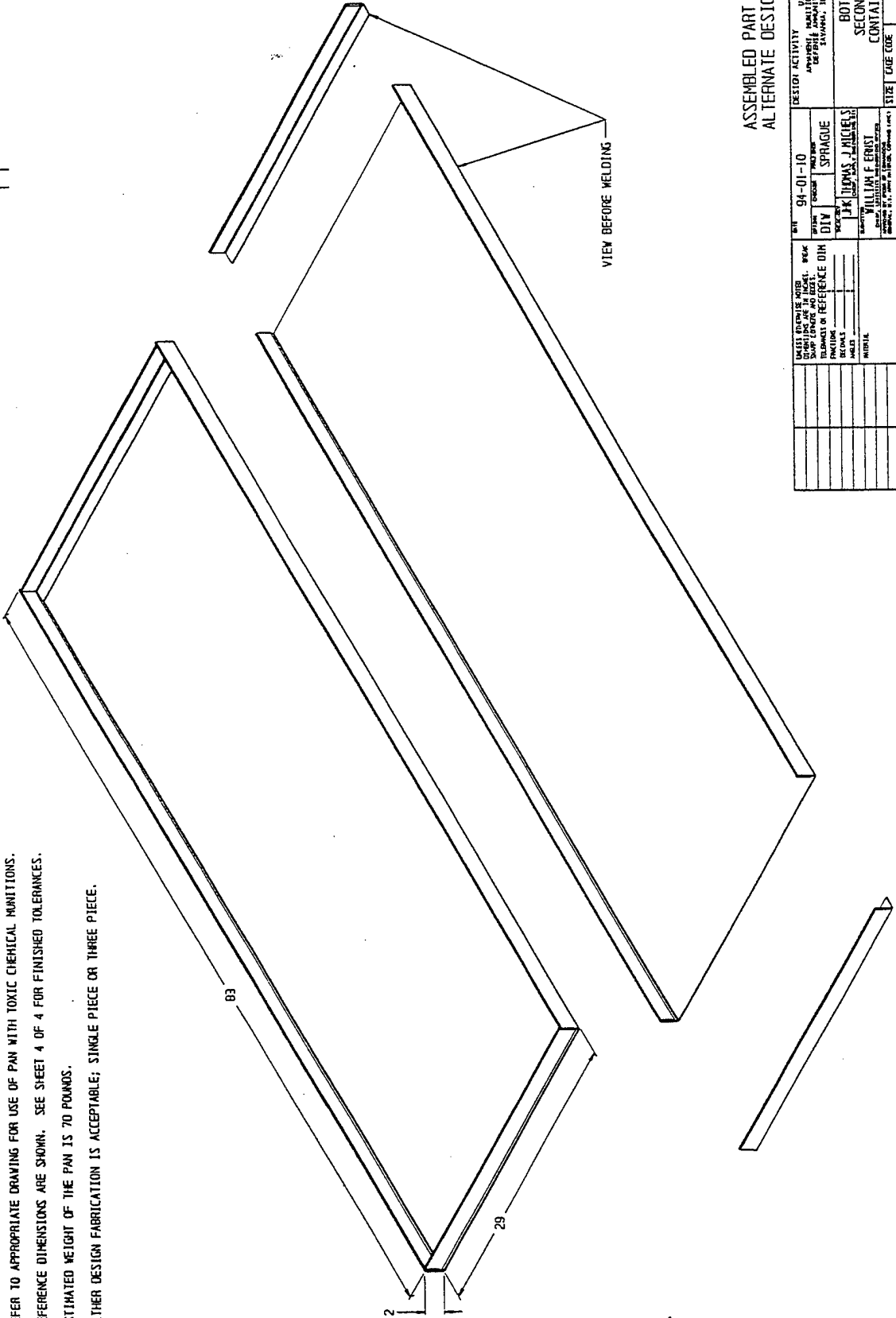
DESIGN ACTIVITY	U.S. ARMY ARMED FORCES CENTER AND SCHOOL SANGHVI, ILLINOIS 62474-9038
PROJECT NO	94-01-10
PROJECT TITLE	SPRAGUE
DESIGNER	THOMAS J. MICHELIS
CHECKER	WILLIAM F. ERNST
DATE	20020
SCALE	1/4
UNIT	IN
APPLICATOR	ACV00235-1
APPLICATION	
SHEET	1 OF 4

DISTRIBUTION STATEMENT A, UNLIMITED

LR	REVISION	DATE	APPROVED
-	RELEASED FOR PRODUCTION	94-03-04	SPRAGUE

NOTES:

1. REFER TO APPROPRIATE DRAWING FOR USE OF PAN WITH TOXIC CHEMICAL MUNITIONS.
2. REFERENCE DIMENSIONS ARE SHOWN. SEE SHEET 4 OF 4 FOR FINISHED TOLERANCES.
3. ESTIMATED WEIGHT OF THE PAN IS 70 POUNDS.
4. EITHER DESIGN FABRICATION IS ACCEPTABLE; SINGLE PIECE OR THREE PIECE.

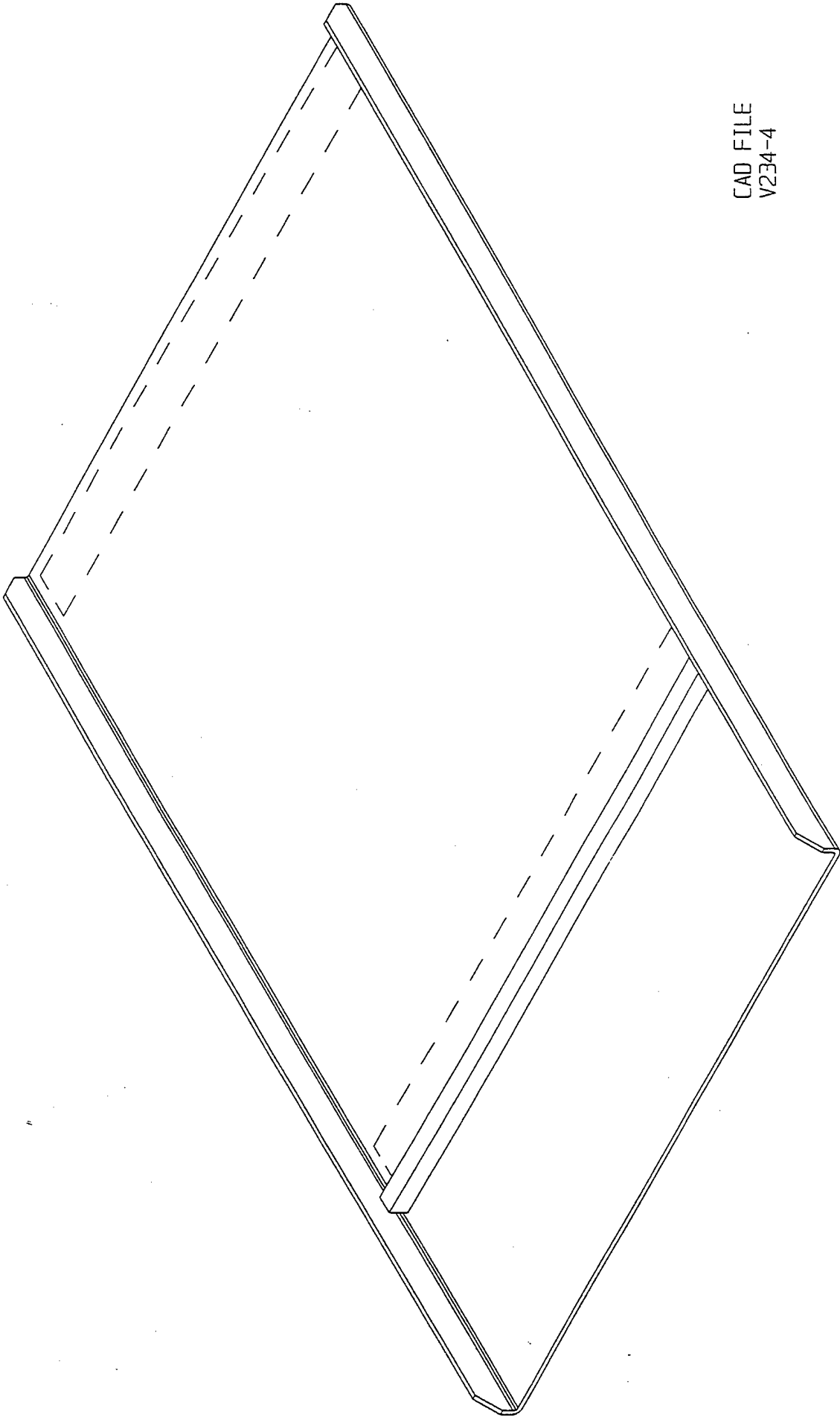


ASSEMBLED PART NO ACV00235-1
ALTERNATE DESIGN; 3 PIECE

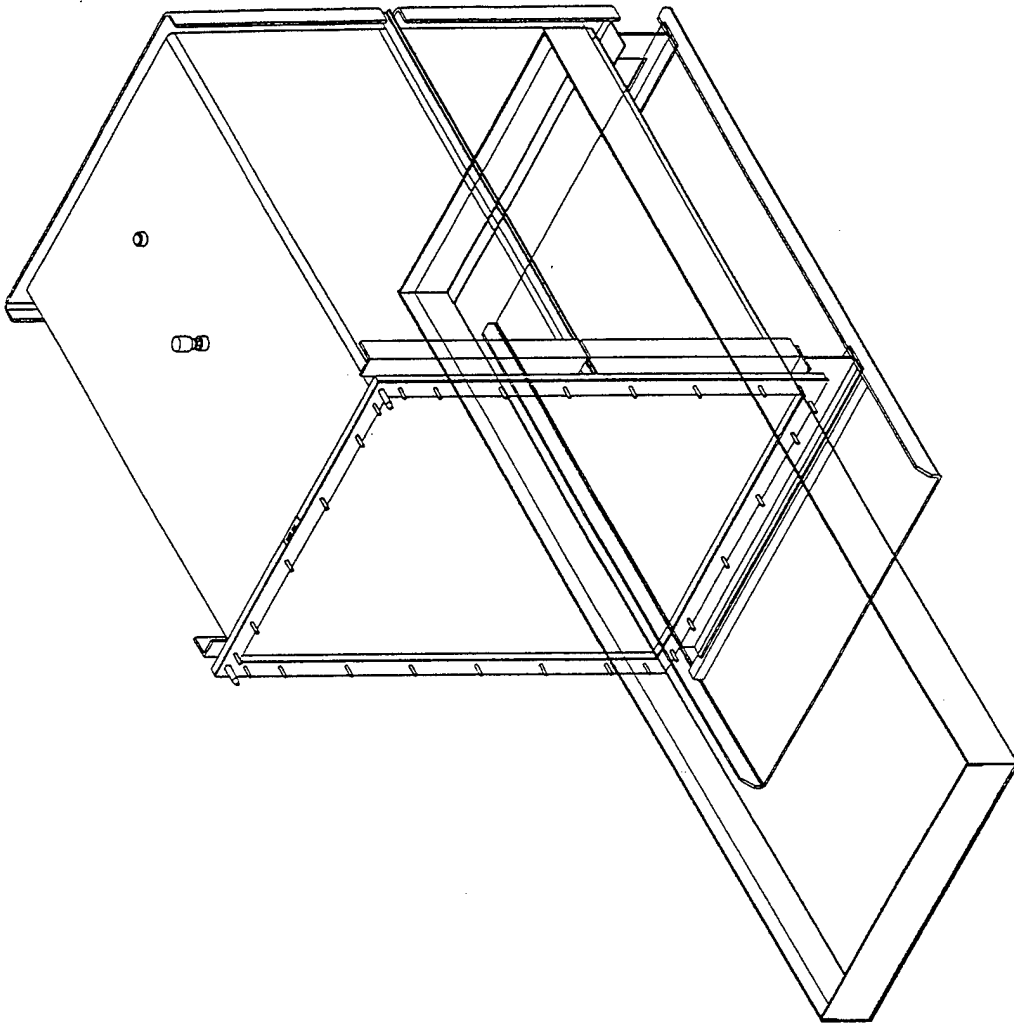
UNLESS OTHERWISE NOTED, DIMENSIONS ARE IN INCHES. DIMENSIONS IN PARENTHESES ARE IN MILLIMETERS.	DATE	94-01-10	DESIGN ACTIVITY	U.S. ARMY APPROPRIATE MANUFACTURING AND SERVICE CENTER STAMPAH, ILLINOIS 61074-9030
ITEM NO.	DIV	SPRAGUE	ITEM NO.	ACV00235-1
REV	BY	WILLIAM F. ERNST	REV	DATE
1	WILLIAM F. ERNST	1	DATE	94-01-10
2	WILLIAM F. ERNST	2	DATE	
3	WILLIAM F. ERNST	3	DATE	
4	WILLIAM F. ERNST	4	DATE	
5	WILLIAM F. ERNST	5	DATE	
6	WILLIAM F. ERNST	6	DATE	
7	WILLIAM F. ERNST	7	DATE	
8	WILLIAM F. ERNST	8	DATE	
9	WILLIAM F. ERNST	9	DATE	
10	WILLIAM F. ERNST	10	DATE	
11	WILLIAM F. ERNST	11	DATE	
12	WILLIAM F. ERNST	12	DATE	
13	WILLIAM F. ERNST	13	DATE	
14	WILLIAM F. ERNST	14	DATE	
15	WILLIAM F. ERNST	15	DATE	
16	WILLIAM F. ERNST	16	DATE	
17	WILLIAM F. ERNST	17	DATE	
18	WILLIAM F. ERNST	18	DATE	
19	WILLIAM F. ERNST	19	DATE	
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DISTRIBUTION STATEMENT A, UNLIMITED

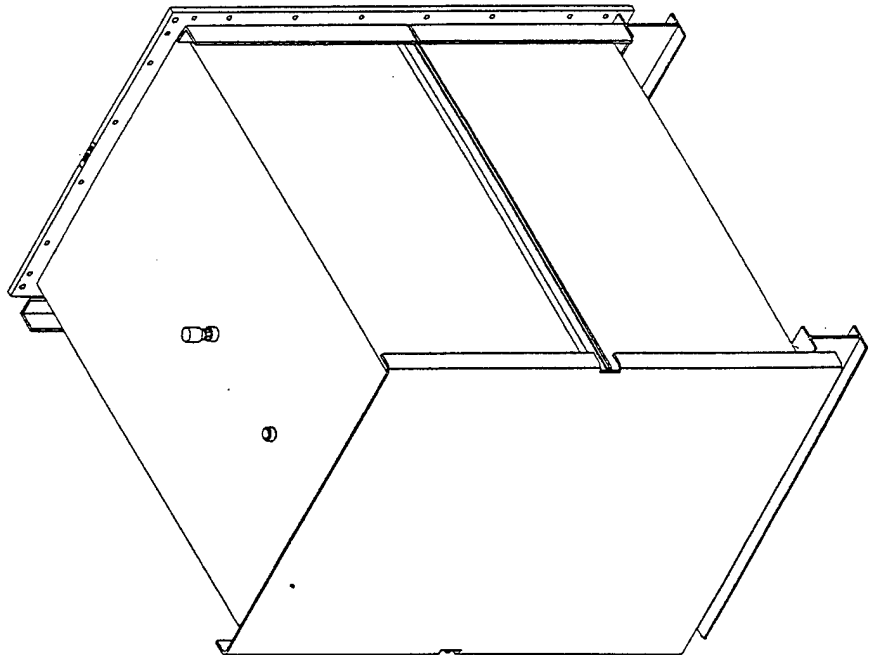
SHEET 3 OF 4

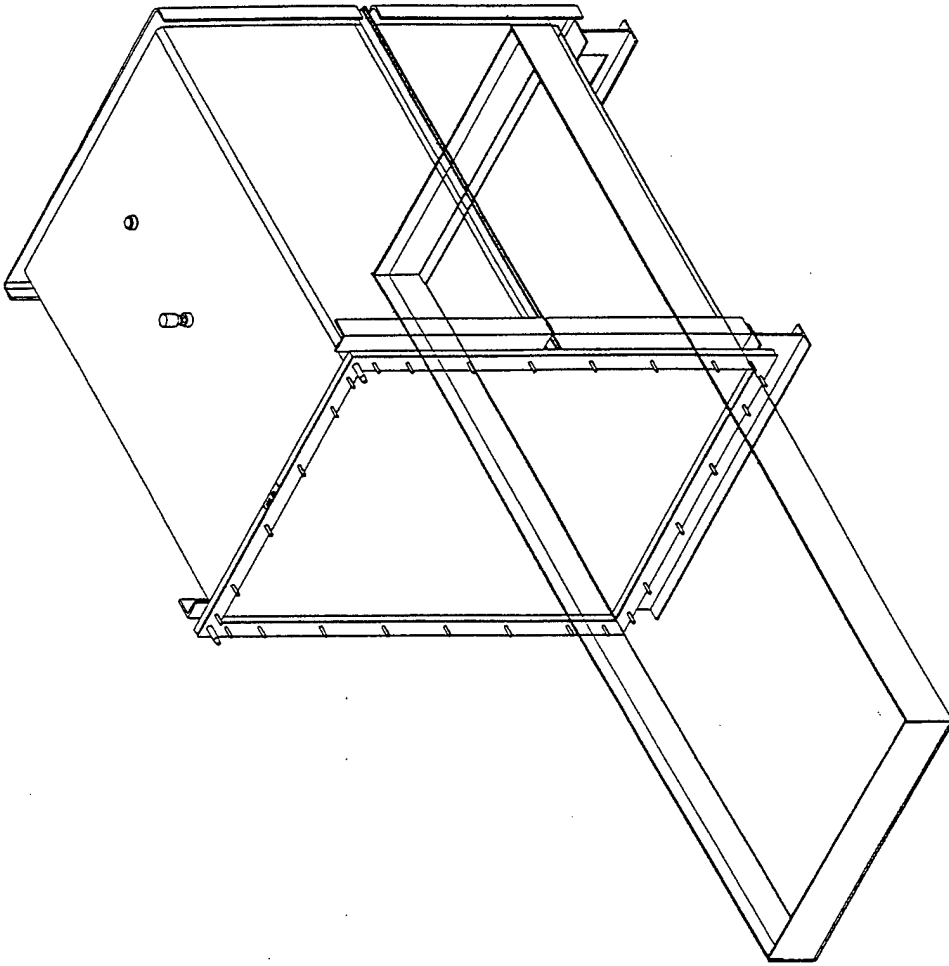


CAD FILE
V234-4

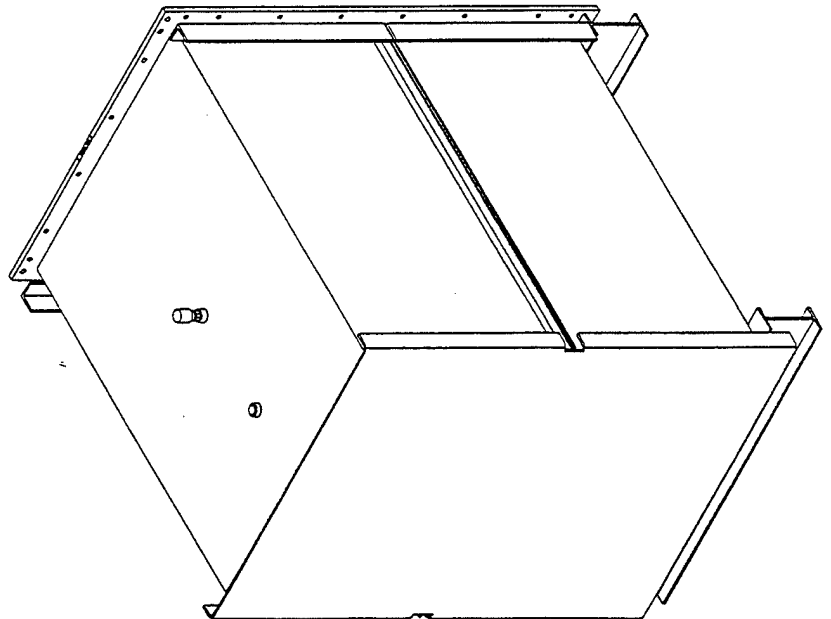


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SSC\NAIL-2.PRT



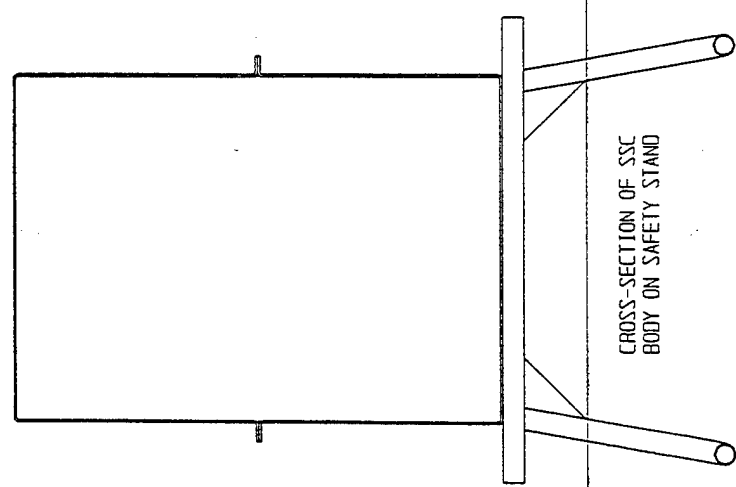
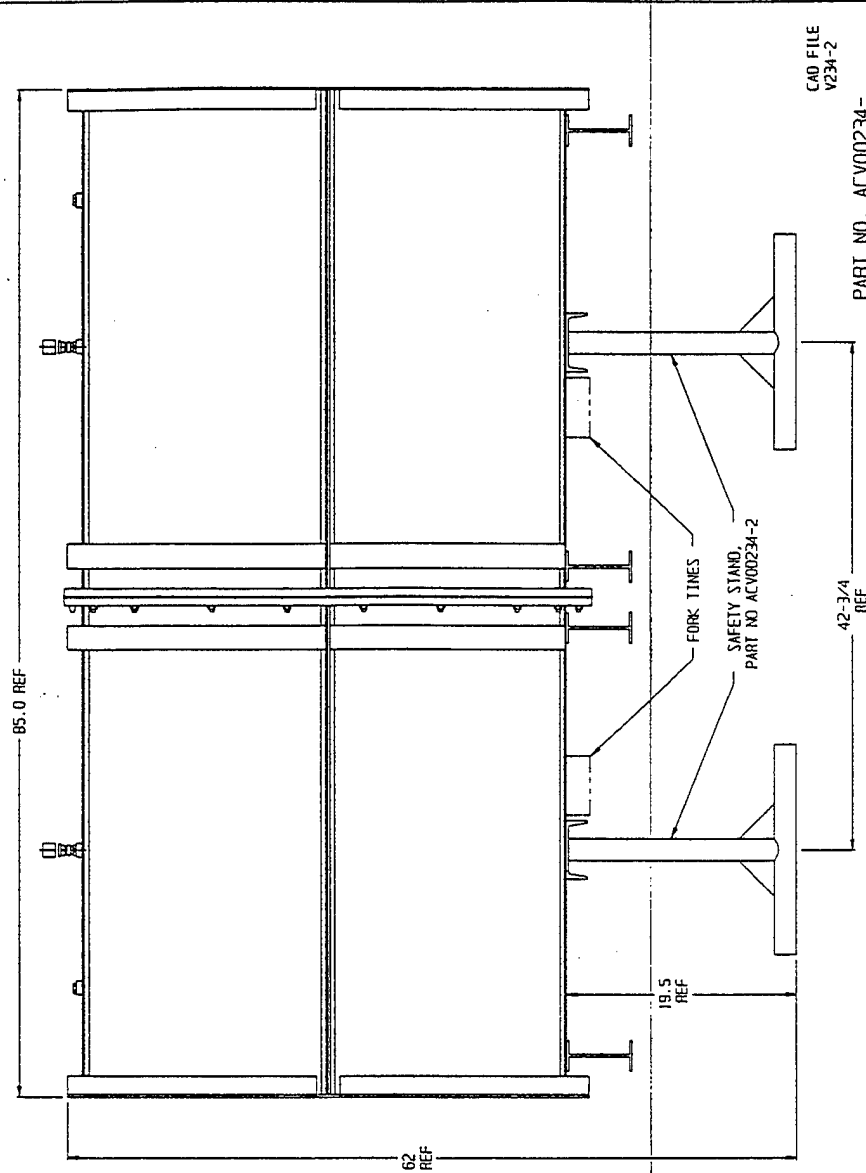


CAD FILE
ASSYGRAIL.PRT



REVISED	DATE	APPROVED

NOTES:
 1. A SAFETY STAND (2 STEEL SAW HORSES) IS USED TO SUPPORT THE COUPLED SSC CONTAINERS AFTER THE INITIAL SNUGGING OF THE NUTS AT TOP AND TWO SIDES OF THE FLANGE. THE STAND ALLOWS FOR A SAFE TORQUE SEQUENCE OF ALL NUTS. THE COUPLED CONTAINERS ARE PLACED ON THE SAFETY STAND BY A FORK LIFT TRUCK.

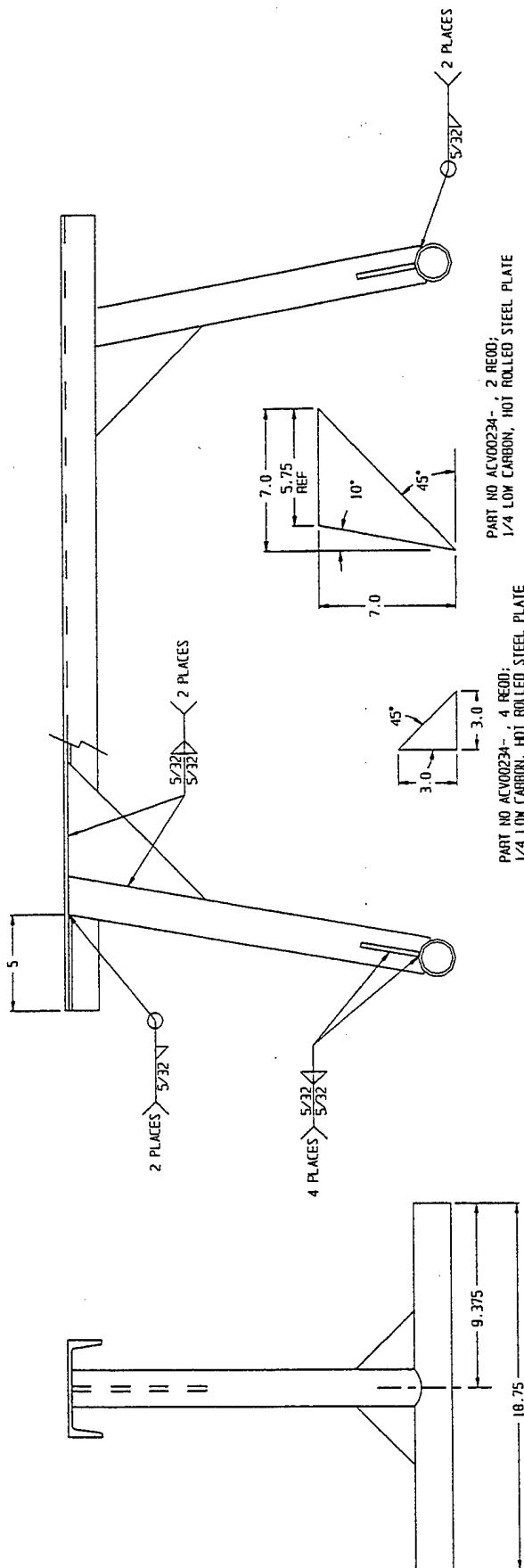


PART NO. ACV00234-
SAFETY STAND USAGE

DATE	94-02-08	BY	APRIL E. RYAN
DESIGNED BY	SPRAGUE	CHECKED BY	APRIL E. RYAN
DRAWN BY		DATE	
SCALE	1:1	UNIT	IN
SHEET	1	OF	1
DESIGN ACTIVITY APRAHMI, MARITONIS AND CHEMICAL COMPANY SAVANNAH, ILLINOIS 61974-9030			
SUPPORT EQUIPMENT, SECONDARY STEEL CONTAINER, COUPLED			
SIZE	D	EDGE CODE	28820
SCALE	1:1	UNIT	IN
PART NO. ACV00234			

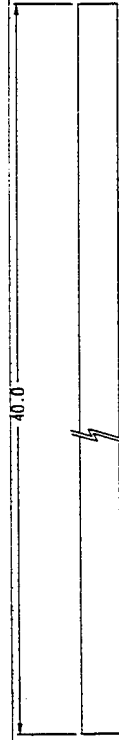
DISTRIBUTION STATEMENT A, UNLIMITED

REVISION		DATE	APPROVED
1	PRODUCT BASELINE ERR 01/01/00	YY-MM-DD	



PART NO ACV00234 - 2 REOD:
1/4 LOW CARBON, HOT ROLLED STEEL PLATE

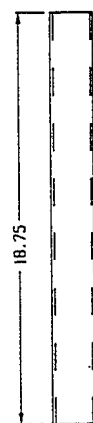
PART NO ACV00234 - 4 REOD:
1/4 LOW CARBON, HOT ROLLED STEEL PLATE



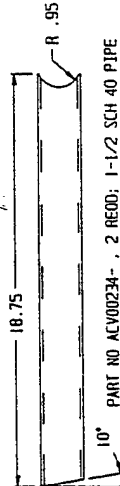
CAD FILE
V234-3

PART NO ACV00234 - 1 REOD:
4 THICK - 5.4 IBS/FT STRUCTURAL STEEL CHANNEL

ASSEMBLY PART NO. ACV00234 -
TWO ASSEMBLIES REQUIRED FOR
SAFETY STAND



PART NO ACV00234 - 2 REOD; 1-1/2 SCH 40 PIPE

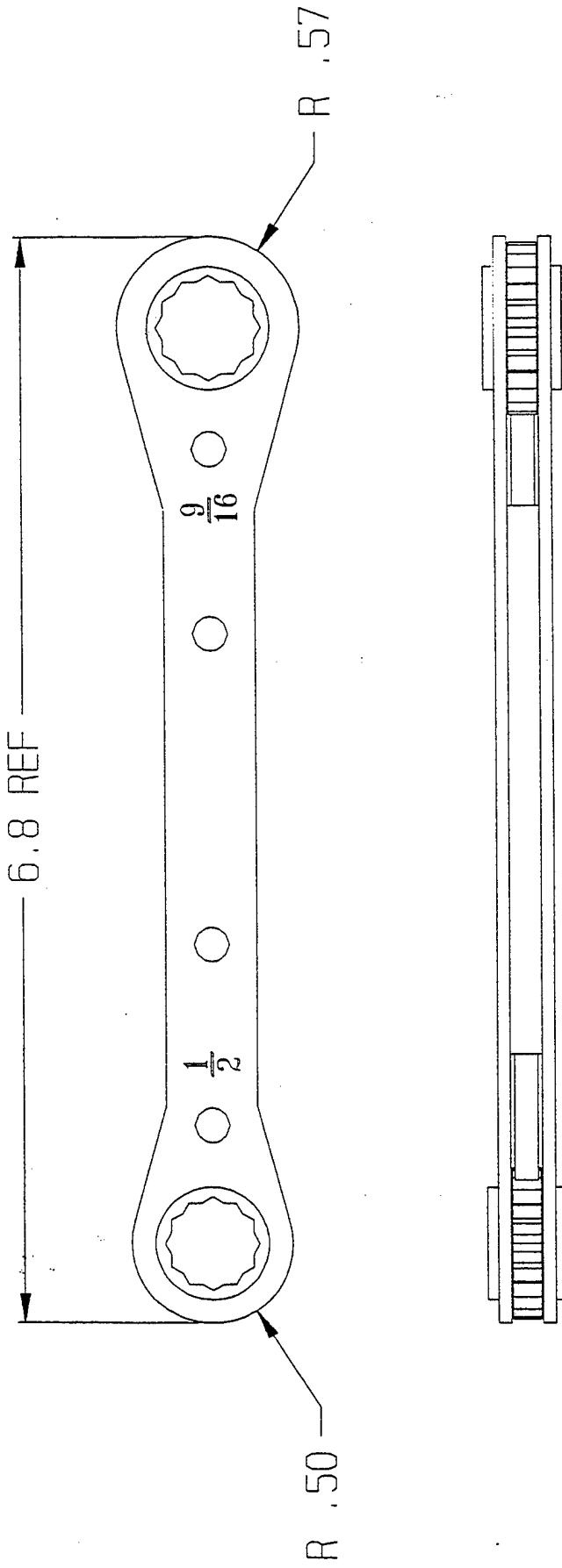


PART NO ACV00234 - 2 REOD; 1-1/2 SCH 40 PIPE

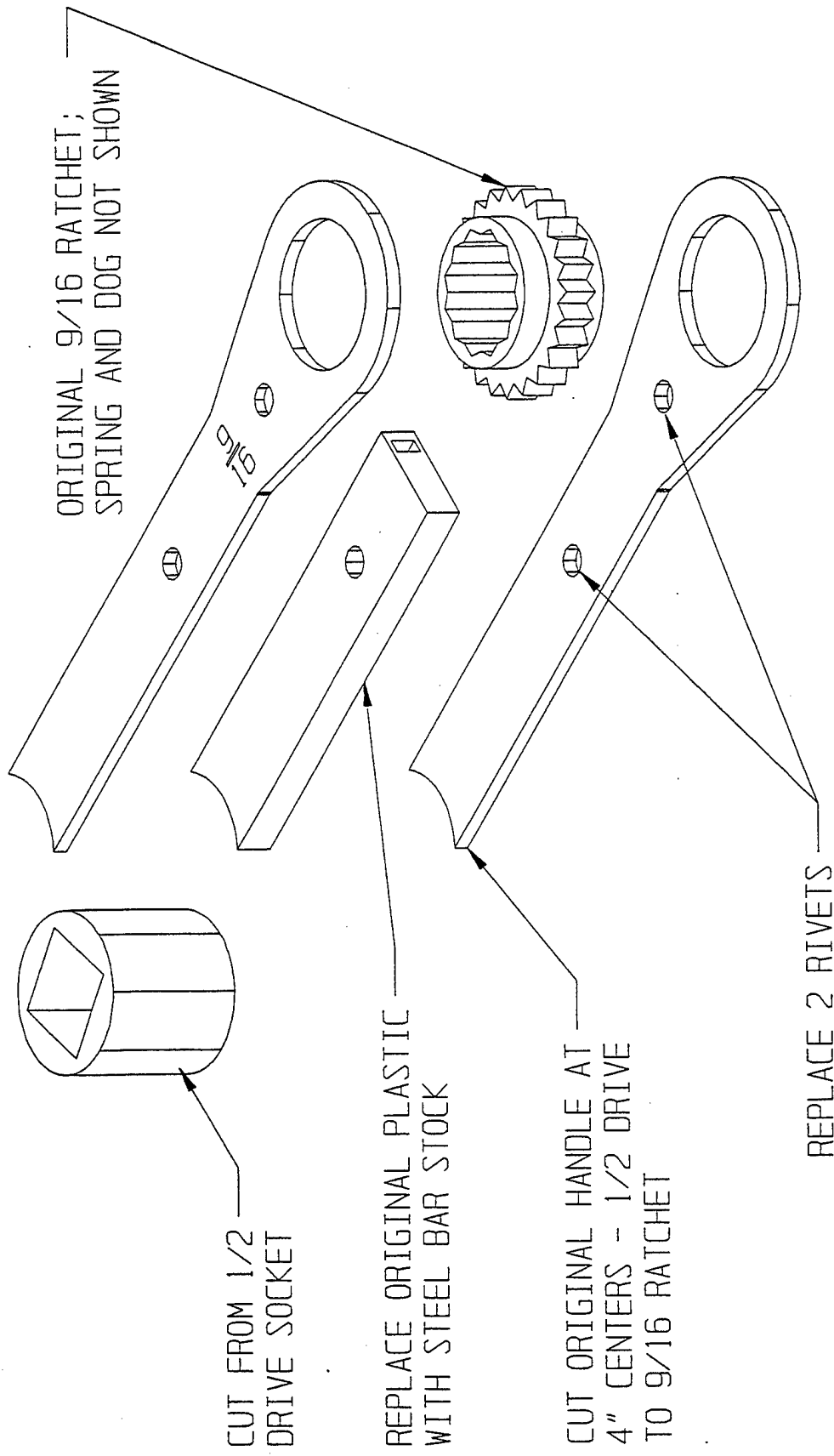
DESIGN ACTIVITY		U.S. ARMY ARMED SERVICES ENGINEERING CENTER FAMPHAM, KILGORE 01074-9030	
DATE	94-02-08	BY	SPRAGUE
REV	01	CHKD	
DIV	11418	DATE	11/92
PROJECT	11418	SCALE	3/8
UNIT		UNIT	VI
UNLESS INDICATED OTHERWISE, DIMENSIONS ARE IN INCHES AND DECIMALS THEREOF.		SHEET EQUIPMENT, SECONDARY STEEL CONTAINER, COUPLED	
DIMENSIONS ARE IN INCHES AND DECIMALS THEREOF.		SIZE	ACV00234
MATERIAL		D	28020
APPLICATION		SCALE	3/8
		UNIT	VI
		SHEET	NO. 01

DISTRIBUTION STATEMENT A, UNLIMITED

1/2 X 9/16 STANDARD RATCHET BOX WRENCH
McMASTER-CARR PART NO 5461A33



CAD FILE
\\SSC\WRENCH-1.PRT



ORIGINAL 9/16 RATCHET;
 SPRING AND DOG NOT SHOWN

CUT FROM 1/2
 DRIVE SOCKET

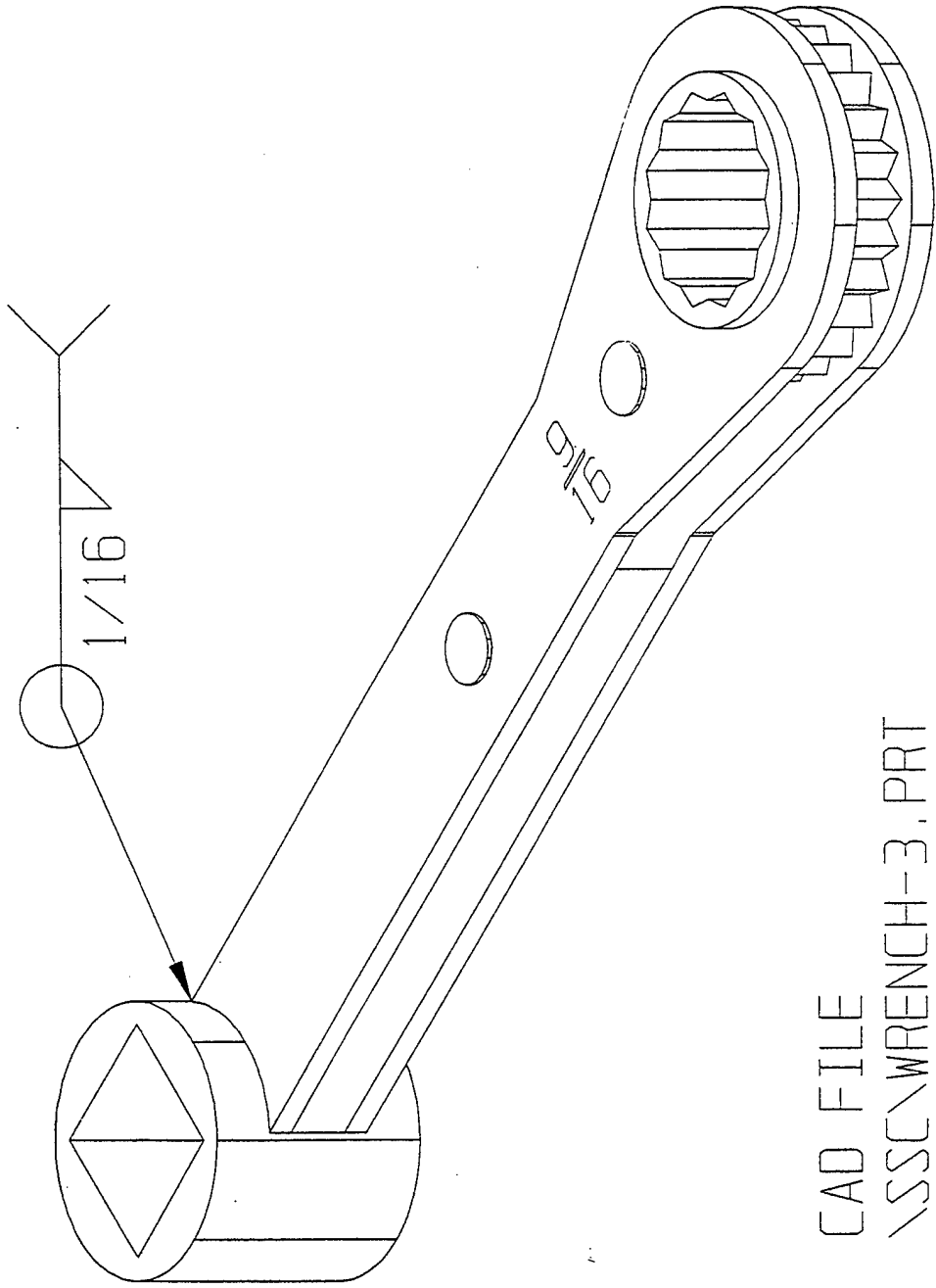
REPLACE ORIGINAL PLASTIC
 WITH STEEL BAR STOCK

CUT ORIGINAL HANDLE AT
 4" CENTERS - 1/2 DRIVE
 TO 9/16 RATCHET

REPLACE 2 RIVETS

CAD FILE
 \SSC\WRENCH-2.PRT

9/16 RATCHET BOX CROW-FOOT WRENCH, 1/2 DRIVE



CAD FILE
\\SSC\WRENCH-3.PRT