# Attachment 0048
# TB 9-289
# Technical Bulletin for the Reconditioning of Type I and Type II Reusable Metal Containers

27 Apr 1984

**Distribution Statement A – Approved for Public Release; distribution unlimited**

# *TB 9-289

*This bulletin supersedes TB 9-289, dated 27 Apr 84.

DEPARTMENT OF THE ARMY
TECHNICAL BULLETIN

# RECONDITIONING OF TYPE I AND TYPE II REUSABLE METAL CONTAINERS

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**REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS**

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**30 OCT 1997**

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# WARNINGS

**WARNING**

**Wear safety glasses and stand clear of air release ports when purging air from containers. Make certain air pressure is fully vented before disassembly. Injury may result from failure to properly vent containers before disassembly.**

**WARNING**

**Do not allow air pressure inside test drum to exceed 10 psi during test. Pressure in excess of 10 psi is not necessary to test pressure and will create a hazard to personnel.**

**WARNING**

**Some cleaners have high concentrates of vapors which are anesthetic and dangerous to life. Use them only with adequate ventilation. Follow directions on containers. Avoid eye irritation or dizziness. Avoid prolonged or repeated contact with skin. Do not take internally. Avoid contact with flame or hot surface as contact may form corrosive fumes.**

**WARNING**

**Contact with paint remover may be hazardous. Prolonged exposure may cause burning irritation or difficulty breathing. Use paint remover only with adequate ventilation. Avoid contact with skin, eyes or clothing. In case of contact, immediately flush with plenty of water. Flush eyes with water holding eyelids open.**

**WARNING**

**Unusable CARC paint mixtures may be considered hazardous waste and require disposal in accordance with Federal, State, DOD, and DA hazardous waste regulations. Consult the installation environmental office for proper disposal guidance. Mixed CARC paint has a flashpoint of approximately 38°F (3°C) due to the incorporation of solvents is highly flammable.**

WARNING

**Heating cured CARC paint above 400°F (204°C) may cause medical injury. Do not heat CARC paint in excess of 400 F (204°C ).**

WARNING

**Use impervious gloves (not cloth) when mixing or applying CARC paint. Avoid skin contact and vapor inhalation.**

*TB 9-289

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington D.C., 30 October 1997

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## 1. PURPOSE.

This bulletin provides instructions for reconditioning to condition code "A" and testing of reusable containers for engines, transmissions, transfer cases and similar items.

## 2. SCOPE.

These reconditioning instructions apply to Type I and Type II reusable metal containers used for shipment and storage of material under the management of the U.S. Army Tank-automotive & Armaments Command (TACOM). These instructions do not apply to initial manufacture and testing of new containers.

**NOTE**

This bulletin has been revised to incorporate the principles RCM (reliability centered maintenance). Reconditioning of reusable containers will be performed in accordance with this bulletin, unless otherwise specified by the procuring activity.

## 3. CLASSIFICATION.

a. Type I container (Fig.1):
   (1) Pressurized during shipment and storage of packaged item.
   (2) Uses filler valve for pressurization and purging.
   (3) Equipped with pressure safety valve.

b. Type II container (Fig.1):
   (1) Not pressurized during shipment and storage of packaged item.
   (2) Equipped with breather valve assembly.
   (3) Atmospheric pressure differential is controlled by the breather valve assembly.

4. PRE-SHOP INSPECTION.

Except where otherwise specified, procedures for Type I and Type II containers are the same.

WARNING

**Wear safety glasses and stand clear of air release ports when purging air from containers. Make certain air pressure is fully vented before disassembly. Injury may result from failure to properly vent containers before disassembly.**

a. Disassembly.

(1) If container is closed and sealed, purge pressure following appropriate opening instructions on container. (Fig.1)

(2) Remove and dispose of the pressure safety valve and filler valve from Type I container (see 4.a. (10), (11). (Fig. 1).

(3) Remove desiccant port cover/assembly and remove, test and dispose of the breather valve assembly from Type II container see 4.a. (10), (12).

(4) Remove and dispose of the humidity indicator assembly. (Fig. 1)

(5) Remove nuts, lockwashers and bolts securing upper half of container to lower half of container. (Fig. 2)

(6) Remove and dispose of the container data plate (Fig. 1

(7) Remove and dispose of the sealing gasket from lower half of container. (Fig. 2)

(8) Remove and dispose of the desiccant bags from wire basket. (Fig. 7)

(9) Mark upper/lower halves to ensure matching during reassembly. (Fig. 2)

NOTE

If upper/lower section (weldment) of a container is not repairable retain the repairable section (weldment) for use with another lower/upper section.

(10) As an option to 100% disposal of valves, individual repair facilities may justify pressure testing of valves by presenting evidence of cost benefits. Justification must include all costs associated with both 100% disposal and 100% testing. This data should include the percentages of pass/fail the facility has experienced in previous testing, if that data is available. Authorization for testing may be obtained by sending cost data to:

Commander
U.S. Army-Tank-automotive & Armament Command
ATTN: AMSTA-IM-A
Warren, MI 48397-5000

WARNING

**Do not allow air pressure inside test drum to exceed 10 psi during test. Pressure in excess of 10 psi is not necessary to test pressure and will create a hazard to personnel.**

(11) Test pressure relief valve, reusable metal container. Type I only. (Fig 5)

(a) Install pressure relief valve to air pressure source. Attach test gauge to pressure relief valve.

(b) Open source of air pressure.

(c) Apply soap suds solution to relief valve to determine opening pressure point.

(d) Observe that pressure relief valve opens between 7 and 10 psi as indicated by test gauge.

(e) Clean and set aside serviceable pressure relief valve. Discard pressure relief valve if defective.

(12)Test pressure control breather valve, reusable metal container. Type II only. (Fig. 6).

(a) Fabricate a sealed can or drum with threading for installation of pressure control breather valve and air source fitting.

NOTE

The fabricated test drum with valve and air source installed must be air-tight to properly test valve operation. If necessary, use silicone compound (MIL-I-8660B) to seal drum around fittings/seams.

(b) Install air pressure source to fittings. Attach manometer or air pressure gauge between drum and air source.

(c) Install a manual shut-off or a clamp to air pressure source at a point preceding air gauge or manometer and test drum.

(d) Apply soap suds solution to breather valve, fabricated air fitting and all seams of test drum.

(e) Open source of air pressure and allow pressure inside drum to 5 psi as indicated by air pressure gauge.

(f) Shut down air pressure source and observe that pressure inside test drum is escaping through breather valve only. Observe that pressure reaches ambient pressure quickly.

(g) Clean and set aside serviceable breather valve. Discard valve, if defective.

b. Cleaning

WARNING
DANGEROUS CLEANING SOLVENTS

**Some cleaners have high concentrates of vapors which are anesthetic and dangerous to life. Use them only with adequate ventilation. Follow directions on containers. Avoid eye irritation or dizziness. Avoid prolonged or repeated contact with skin. Do not take internally. Avoid contact with flame or hot surfaces as contact may form corrosive fumes.**

(1) Clean all desiccant port covers/assemblies removed from container as outlined in (2) below.

(2) Clean interior and exterior surfaces of container. Use any process or combination of processes which will accomplish thorough cleaning without damage to the container to TM 38-230-1 for information on cleaning and preservation and shipping containers.

**WARNING**
**PAINT REMOVER**

**Contact with paint remover may be hazardous . Prolonged exposure may cause burning, irritation or difficulty breathing. Use paint remover only with adequate ventilation. Avoid contact with skin, eyes or clothing. In case of contact, immediately flush with plenty of water. Flush eyes with water holding eyelids open.**

(3) Remove paint scale and rust. (Refer to TM 38-230-1)

c. Visual Inspection. Annotate all defects on inspection records.

(1) Check interior and exterior of container for dents, tears, cracks, defective welds and other defects. Dents approximately 3/4 inch or less deep that do not penetrate skin or weaken structure are acceptable and are not considered defects. (See paragraph 5a, b, c, e.).

(2) Check inner frame for bends and cracks. (See paragraph 5g) (Fig 2)

(3) Check mounting brackets for bends and cracks. (See paragraph 5f) (Fig 4)

(4) Check wire basket for defective tack welds. (See paragraph 5d) (Fig 4)

(5) Visually inspect desiccant port covers/assemblies. damaged/unserviceable, replace with new. Reinstall desiccant port cover/assembly. (See paragraph 5i)

(6) Inspect vibration dampener mounts for defects, such as crackling, tearing or evidence of separation of bonding between metal and elastomer, which may affect the function of the mount. Note date of manufacture. (See paragraph 5h) (Fig 2)



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(7) Inspect skids while on container for weakness and wear by noting the following defects. (See paragraph 5j) (Fig 2)

(a) Cracks and splits wider than 1/8 inch, longer than 1/2 the length and exceeding 1/2 the width and thickness.

(b) Broken off ends and split or chipped off areas longer than 1/3 the length and exceeding 1/2 the width or thickness, extending into bolt holes and stacking notches, or eliminating more than 1/3 the load bearing surface.

(c) Thickness less than 1/2 inch than specified on the drawing.

(d) Space wider than 1/2 inch between side of skid and skid mounting bracket due to narrow skid width.

(e) Any evidence of decay except in knots.

(f) Any evidence of insect infestation.

(8) Inspect covers and recessed receptacles, including plastic windows, from upper half of container for reusability. (See paragraph 5k)

d. Inspect installation decal for cracks, tears, illegibility and failure of adhesion. Decals with these characteristics are unserviceable. (See paragraph 8d)

e. Route all containers with defects to repair shop. If reconditioning costs will exceed 60% of the new container costs shown in the AMDF, authorization of disposal or repair of container must be obtained from:

Commander
U.S. Army Tank-automotive & Armaments Command
ATTN: AMSTA-IM-A
Warren, MI 48397-5000

f. After reconditioning, route all containers to leak testing(see paragraph 6).

g. After all reconditioning and leak testing has been completed, route all containers to the paint shop. (See paragraph 7)

## 5. RECONDITIONING

**NOTE**

The Technical Data Package for the metal container being reconditioned is the primary source of detailed requirements. These requirements are modified as applicable to the instructions contained herein.

a. Remove all dents over 3/4 inch deep by heat straightening and welding over weakened areas. (See paragraph 4c(1))

b. Eliminate holes by heat straightening metal surrounding holes and covering the hole with a welded patch inside the container. Extend patches at least 1/2 inch in all directions beyond the rupture. (See paragraph 4c(1))

c. Repair tears by heating and and bending the torn metal back into place and weld the seam from the outside of the container to meet the requirements of MIL-STD-1261C.

d. Reweld all cracked and defective welds to meet requirements of MIL-STD-1261C. (See paragraph 4c(1))

e. Straighten bent wire basket. Weld all defective tack welds between wire basket and container. (See paragraph 4c(4))

f. Straighten or otherwise repair bends and distortions in flanges that affect proper mating of upper-to-lower halves. (See paragraph 4c(1)).

g. Replace or repair broken mounting brackets or repair cracks by welding per requirements of MIL-STD-1261C. (See paragraph 4c(3))

h. Straighten or otherwise repair bent inner frame, repair cracks by welding per requirements of MIL-STD-1261C (See paragraph 4c(2)).

i. Replace mounts five (5) years or older from date of manufacture and those identified as defective. (See paragraph 4c (6))

(1) As an option to 100% replacement of mounts five (5) years or older, individual repair facilities may justify static load deflection testing of mounts by presenting evidence of cost benefits. Justification must include all costs associated with both 100% disposal and 100% testing. This data should include the percentages of pass/fail the facility has experienced in previous testing.

Authorization for testing may be obtained by sending cost data to:

Commander
U.S. Army Tank-automotive & Armaments Command
AMSTA-IM-OEM
Warren, MI 48397-5000

(2) Tested mounts must meet the deflection test requirements shown on applicable drawings in an accordance with static load deflection requirements of CIDA-A-52486. Mounts that fail to meet these requirements will be replaced.

j. Replace unserviceable desiccant port cover assemblies. (see paragraph 4.c.(5)).

k. Replace unserviceable covers and recessed receptacles including cracked and punctured windows (See paragraph 4.c. (8)).

**NOTE**

Wood skids shall not be treated with preservative compound. The treatment note on skid drawing shall be disregarded in its entirety.

l. Replace unserviceable skids. Fabricate skid from hardwood conforming to Group IV of MIL-STD-731 and the applicable drawing. (See paragraph 4.c. (7)).

m. Route all reconditioned containers to leak testing.

## 6. LEAK TESTING

**NOTE**

Either a new or used gasket in serviceable condition may be used during testing. Do not use a gasket with breaks, cracks, flaking or permanent deformation.

a. Install sealing gasket as specified in the TDP in closure flange, lower half of container.

**NOTE**

Decals are attached to the inside of Type I container and on the outside of Type II containers.

b. Install upper half on lower half of container and secure in place with bolts, washers and nuts. Torque nuts as specified on installation decal.

c. Fit either desiccant port or humidity indicator hole with compressed air source and plug unused hole prior to pressurization.

**CAUTION**

Equip compressed air source with water separator (4940-00-242-4100) MIL-S-12928F) or equivalent.

d. Pressurize Type I container to 10 +/- 1/2 psi. (Fig 5)

e. Pressurize Type II container to 3 +/- 1/2 psi. (Fig 6)

f. Immerse container in water. Evidence of air bubbles due to air leaks will be cause for rejection and rework. (see paragraph 5.c.)

g. As an alternative test, pressurize containers as in paragraphs c. and d. above and let it stand for 12 hours. A pressure drop of 1/2 psi over the 12 hours will be a cause of rejection and rework. (see paragraph 5.c.)

h. Alternate methods such as trace gas testing or variations on the 12 hour pressure retention test may be submitted for review to:

Commander
U.S. Army Tank-automotive & Armaments Command
AMSTA-IM-OEM
Warren, MI 48397-5000

## 7. REFINISHING PROCEDURES

**WARNING**

**UNUSABLE CARC PAINT**

**Unusable CARC Paint mixtures may be considered hazardous waste and require disposal in accordance with Federal, State, DOD and DA hazardous waste regulations. Consult the installation environmental office for proper disposal guidance. Mixed CARC paint has a flashpoint of approximately 38°F (3°C) due to the incorporation of solvents and is highly flammable.**

**HEATING CARC PAINT**

**Heating cured CARC paint above 400°F (204°C) may cause medical injury. Do not heat CARC paint in excess of 400°F (204°C)**

**CARC PAINT PROTECTION**

**Use impervious gloves (not cloth) when mixing or applying CARC paint . Avoid skin contact and vapor inhalation.**

**NOTE**

Container interiors/exteriors will not be completely stripped and repainted for cosmetic reasons, except for FMS customers. Mask all decals prior to initiation of the following procedures.

a. Prime and paint interior and exterior metal surfaces of containers that have had finish removed during cleaning or repair. Apply CARC paint in both spot painting and total refinishing.

b. Clean method I or III in accordance with TT-C-490.

c. Treat (pretreatment) per Type I or III of TT-C-490.

d. Prime per MIL-P-53030, or MIL-P-53022. Dry film thickness shall be 0.8 to 1.5 mils.

e. Top coat color green 383 per MIL-C-46168 or MIL-C-53039. Dry film thickness shall be 1.8 Mils minimum.

f. Application of CARC paint to be in accordance with MIL-C-53072.

## 8. ASSEMBLY AFTER TESTING

a. For Type I container, install pressure safety valve ( NSN 4820-00-620-8123; Part number 8376456) and filler valve (NSN 4820-00-242-4064, part number 8376442) if not previously installed prior to testing.

b. For Type II container, install breather valve assembly ( NSN 8145-01-005-2994), Part Number 2642880).

c. Reinstall all desiccant port cover/assemblies. Replace damaged covers/assemblies with new.

d. Install new installation instruction decal if original is missing or unserviceable. (see paragraph 4.d.)

e. Install new humidity indicator assembly. If irreversible indicator is required, do not install new indicator until item is to be sealed in the container. Install plug with gasket in indicator hole

## 9. MARKING

a. Each container data plate shall be marked with container part number, container National Stock Number (NSN) contract number for reconditioning the container and container specification. The container specification shall be TB 9-289. Additionally, if contract is for item in container, the item part number, item National Stock Number, combination Part Number and combination National Stock Number shall be marked on the data plate.

b. Specific containers will be marked in accordance with the drawings for that container.

c. Stenciled markings must be in black CARC paint per MIL-C-46218 or MIL-C-53039.



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## 10. PREPARATION OF EMPTY CONTAINERS FOR SHIPMENT OR STORAGE

Refer to applicable Special Packaging Instructions (SPI) for the container to be shipped or stored.

## 11. REFERENCES

Occupational and Environmental Health Preventive Treatment and Control of Heat Injury.....TB Med 507

Metal Body Repair and Related Operations.....FM 43-2

Preservation, Packaging, and Packing of Military Supplies and Equipment

Preservation and Packaging..VOL I..... TM 38-230-1
Packing VOL II.....TM 38-230-2

Specific technical and repair parts (RPSTL)Manuals for the materials being stored or shipped in the containers being reconditioned; i.e., the engine, transmission, or other components, to include any end item manuals which are applicable.

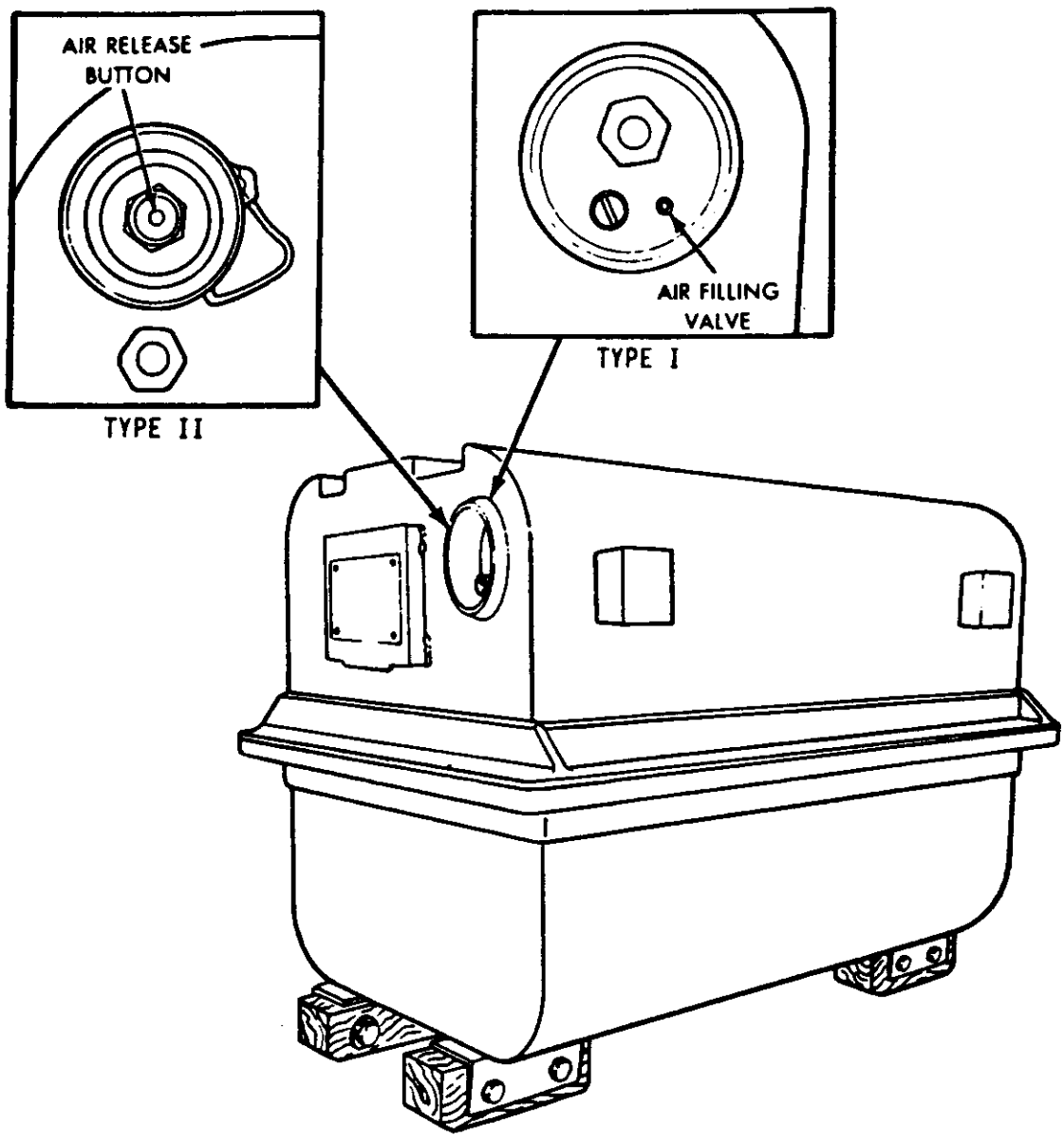


Figure 1. - Type I container, air pressure relief valve
Type II container, breather valve.

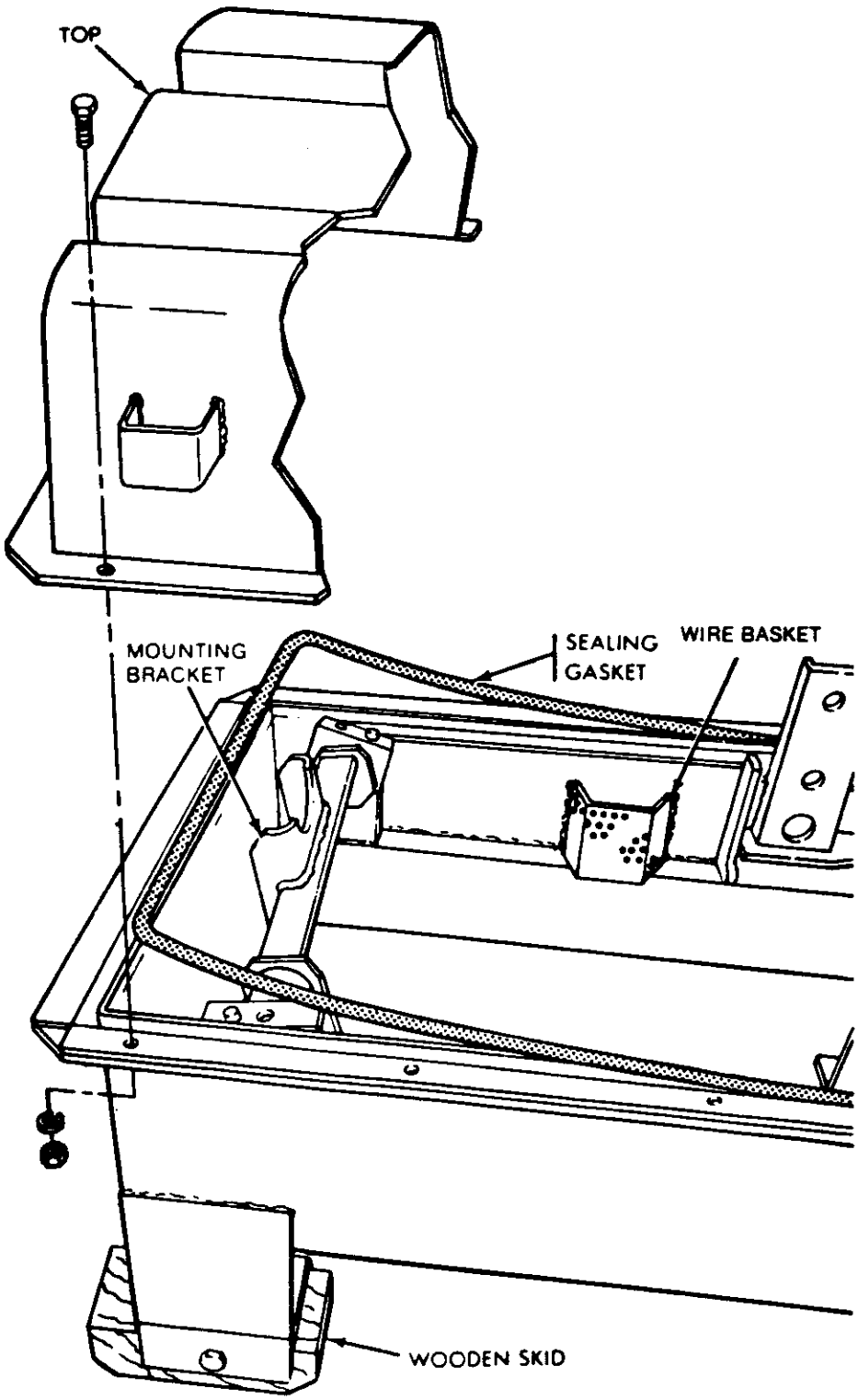


Figure 2. - Types I & II. Removal of upper and lower halves of container showing sealing gasket, mounting flanges, wooden skids.

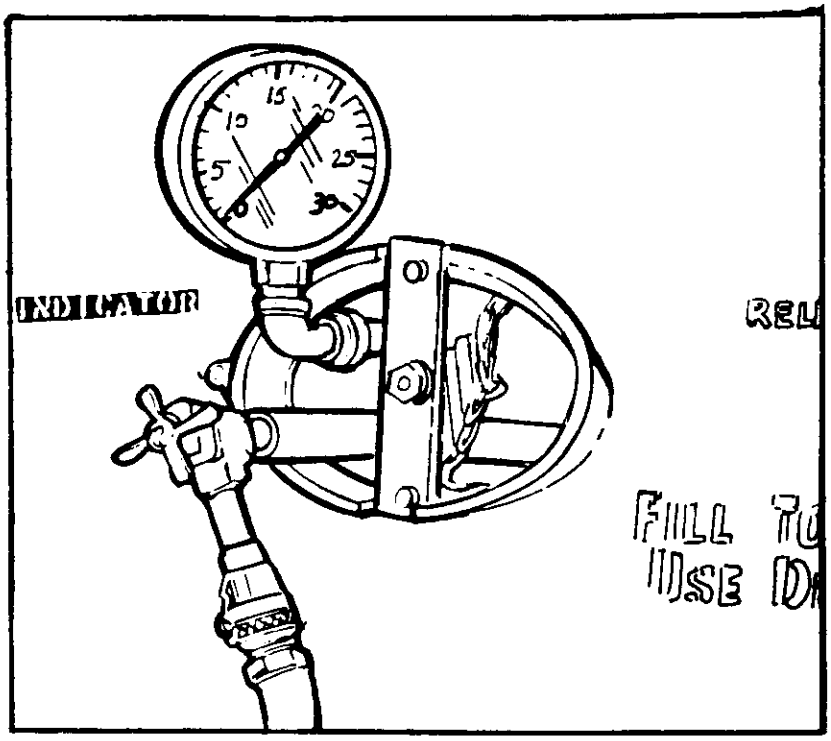


Figure 3. - Locally assembled fixture for inflating and indicating air pressure in container.

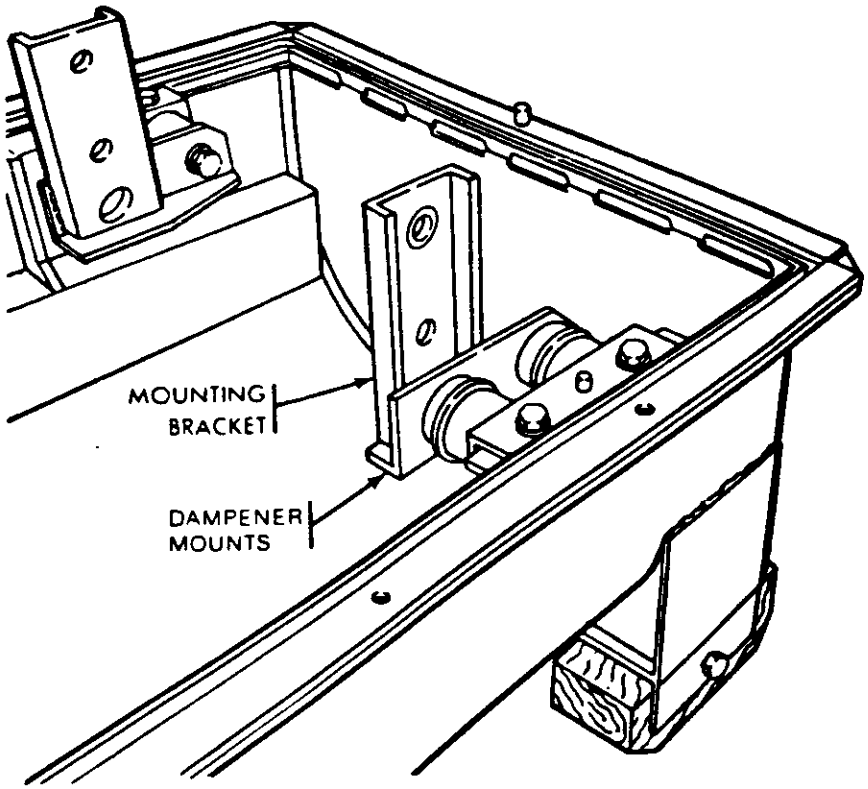


Figure 4. - Close-up of vibration dampener mounts and mounting brackets.

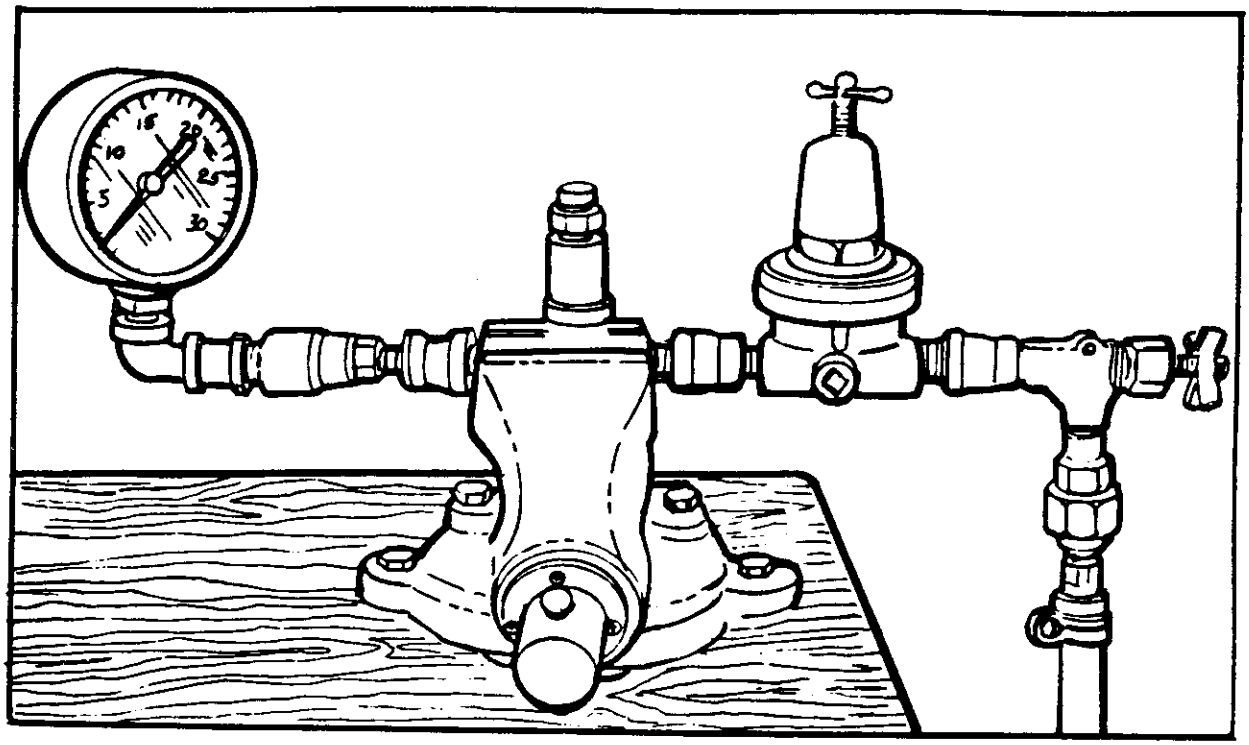

Figure 5. - Fabricated Test of Pressure Relief Valve, Type I container.

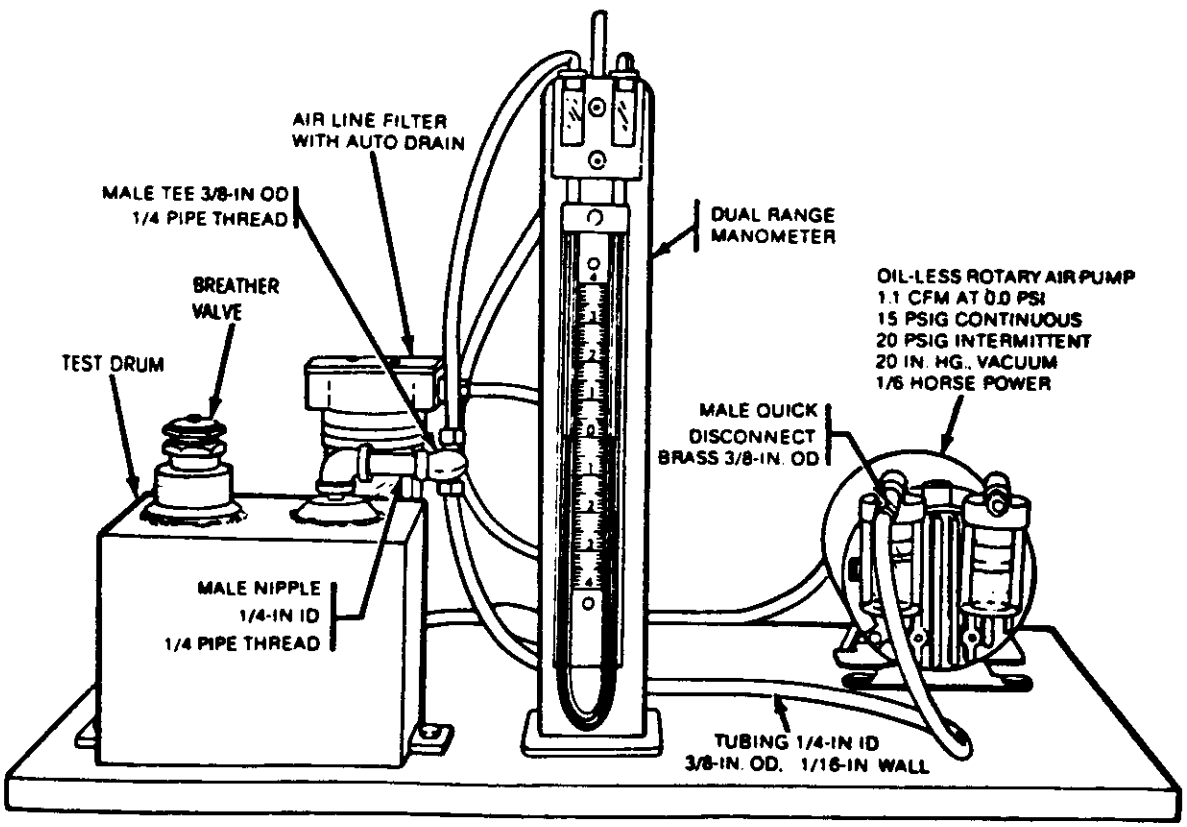


Figure 6. - Fabricated Test of Breather Valve, Type II container.

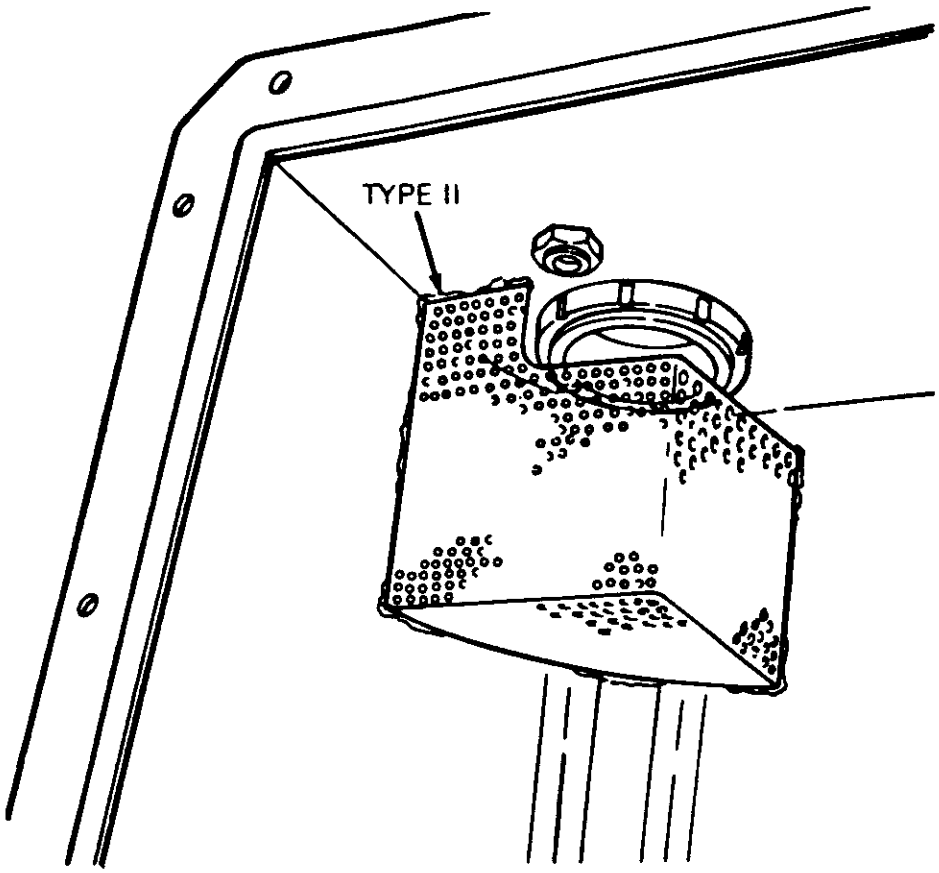


Figure 7 - Upper half of container with wire basket for desiccant packet containment.

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

DENNIS J. REIMER
*General, United States Army*
*Chief of Staff*

Official:

JOEL B. HUDSON
*Administrative Assistant to the*
*Secretary of the Army*
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| PAGE NO | PARA-GRAPH | FIGURE NO | TABLE NO | IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT: |
|---|---|---|---|---|
| 15-1 | | | 15 | Item 4 Part Number MS27183-10 is listed with quantity of 4. Only 3 are used on the assembly. Please change quantity to 3. |
| 68-1 | | | 68 | Illustration shows item 11 as a washer, but table lists it as a nut. Please change illustration to show item 11 as a nut. |
| I-83 | | | Indx | Part Number MS90725-62 is cross-referenced to Fig. 75 item 31, but page 75-1 lists it as item 28. Please correct indx. |

SAMPLE

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