

**\*TB 43-0156**

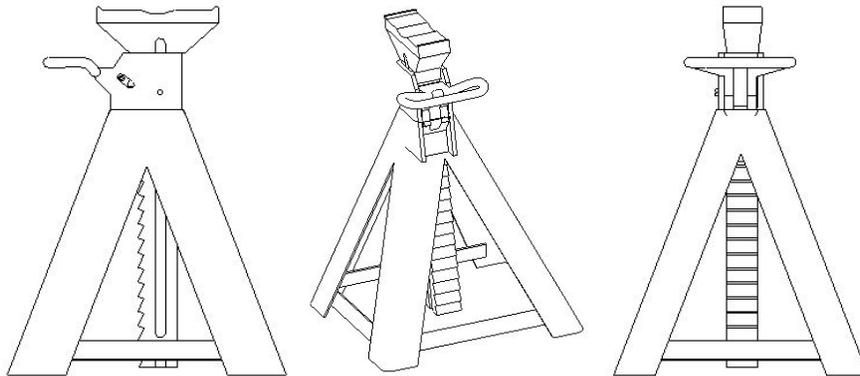
---

**TECHNICAL BULLETIN**

**SAFETY INSPECTION AND OPERATION OF  
STAND, VEHICLE SUPPORT:**

**5 TON: NSN 4910-00-262-0392**

**7 TON: NSN 4910-00-251-8013**



\*Supersedes TB 43-0156, 31 August 2007.

**DISTRIBUTION STATEMENT A.** Approved for public release; distribution is unlimited.

---

**HEADQUARTERS, DEPARTMENT OF THE ARMY \*\*\*  
\*\*\*\*\*>I @ 2010**



## WARNING SUMMARY

This warning summary contains general safety warnings that must be understood and applied during operation and maintenance of this equipment. Failure to observe these precautions could result in serious injury or death to personnel.

### FIRST AID

For first aid information, refer to FM 4-25.11, First Aid.

### EXPLANATION OF SAFETY WARNING ICONS



**HEAVY OBJECT** – Heavy object on human figure shows that heavy parts present a danger to life or limb.



**HEAVY OBJECT** – Foot with heavy object on top shows that heavy parts can crush and harm.



**HEAVY OBJECT** – Hand with heavy object on top shows that heavy parts can crush and harm.

### GENERAL SAFETY WARNINGS DESCRIPTION

#### WARNING



#### VEHICLE SUPPORT STAND HAZARDS

The use of locally purchased stands using straight pins inserted through base and column to hold up load is not recommended. Pin substitution is unsafe and could result in stand failure, causing severe injury or death to user.

The use of damaged, corroded or otherwise defective stands could result in stand failure, causing severe injury or death to user. Always inspect stands prior to use.

Study, understand and follow all instructions before operating this device. Failure to heed these instructions may result in property damage and/or personnel injury or death:

- Under-vehicle work shall use a certified vehicle hoist (preferred) or vehicle support stands in combination with blocking and shoring.
- Do not exceed rated capacity.
- Use only on a hard level surface.
- Center load on saddle.
- Use as a matched pair to support each end of the vehicle.
- No alterations shall be made or attachments added to this product.



HEADQUARTERS  
DEPARTMENT OF THE ARMY  
WASHINGTON, DC 1) >I @ 2010

TECHNICAL BULLETIN

SAFETY INSPECTION AND OPERATION OF

STAND, VEHICLE SUPPORT:

5 TON: NSN 4910-00-262-0392

7 TON: NSN 4910-00-251-8013

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any errors, or if you would like to recommend any improvements to the procedures in this publication, please let us know. The preferred method is to submit your DA Form 2028 (Recommended Changes to Publications and Blank Forms) through the Internet, on the Army Electronic Product Support (AEPS) website. The Internet address is <https://aeeps.ria.army.mil>. The DA Form 2028 is located under the Public Applications section in the AEPS Public Home Page. Fill out the form and click on SUBMIT. Using this form on the AEPS will enable us to respond more quickly to your comments and better manage the DA Form 2028 program. You may also mail, e-mail, or fax your comments or DA Form 2028 directly to the U.S. Army TACOM Life Cycle Management Command. The postal mail address is U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-LCL-MPP / TECH PUBS, 1 Rock Island Arsenal, Rock Island, IL 61299-7630. The e-mail address is [tacomlcmc.daform2028@us.army.mil](mailto:tacomlcmc.daform2028@us.army.mil). The fax number is DSN 793-0726 or Commercial (309) 782-0726.

**DISTRIBUTION STATEMENT A.** Approved for public release; distribution is unlimited.

TABLE OF CONTENTS

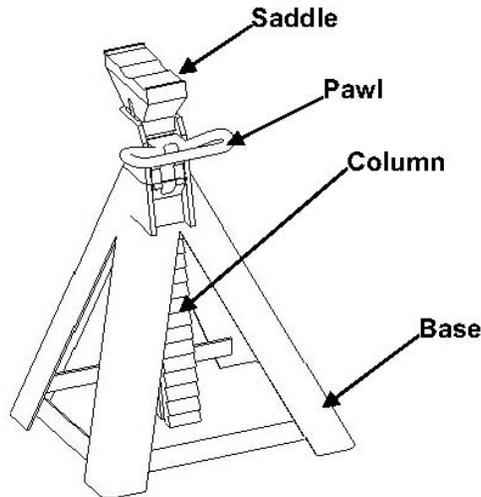
<u>Paragraph</u>	<u>Title</u>	<u>Page</u>
	Warning Summary.....	a
1	Purpose.....	2
2	Scope.....	2
3	Application.....	2
4	References.....	2
5	Definitions.....	2
6	Responsibilities.....	3
7	Product Requirements.....	4
8	Preventive Maintenance Checks and Services (PMCS)..	4
9	Operation and Use.....	7
	Appendix A.....	9
	Appendix B.....	10

\*Supersedes TB 43-0156, 31 August 2007.

## TB 43-0156

1. **Purpose.** This bulletin prescribes the responsibilities, procedures, and guidance for accomplishing safety inspections and use of vehicle support stands. The purpose is to provide direction to local purchasers, supervisors, users, and others concerned with or responsible for its proper application, and comply with the requirements of the Occupational Safety and Health Administration (OSHA) and The Army Safety Program (AR 385-10).
2. **Scope.** This bulletin applies to Army Commands (ACOMs), Army Service Component Commands (ASCCs), Direct Reporting Units (DRUs), field operating agencies and Chief, National Guard Bureau (NGB), including subordinate commands, installations and activities.
3. **Application.**
  - a. TB 43-0156 supersedes TB 43-0142 in regards to Vehicle Support Stands.
  - b. There may be instances where host nation standards may apply. In those cases the more stringent standards will be met.
  - c. This technical bulletin shall be used in conjunction with appropriate vehicle operator's manuals and/or appropriate Department of the Army authenticated technical manuals.
4. **References.** Applicable publications and forms referred to in this bulletin are listed in Appendix A.
5. **Definitions.**
  - a. Base: portion of the stand that rests on the ground, provides lateral stability and holds the adjustable column in an upright position.
  - b. Column: vertical rack gear used for elevation.
  - c. Functional test: manual operation to determine that all parts operate as required.
  - d. Matched pair: vehicle stands of the same design and capacity from the same manufacturer.
  - e. Pawl: mechanical locking device designed to prevent slippage of the column.
  - f. Saddle: featured designed area of the column used to position and support the load.
  - g. Vehicle support stands: devices for supporting a vehicle at fixed heights, but lacking the means for raising or lowering the vehicle. The terms "vehicle support stand" and "jack stand" are interchangeable.
  - h. **WARNING, CAUTION** and **NOTE** statements: A **WARNING** identifies a clear danger to the person doing that procedure. A **CAUTION** identifies risk of damage to the equipment. A **NOTE** highlights essential procedures, conditions or statements, or conveys important instructional data to the user.

5. Definitions - Continued.



**Vehicle Support Stand**

6. **Responsibilities.** Military and Army civilian officials at each management level shall promote strong safety programs, safe working conditions and safe performance to prevent accidents, injuries and occupational illnesses (reference AR 385-10, para 16-2) and ensure workplaces are free from recognized hazards that are causing or are likely to cause death or serious physical harm (reference AR 385-10, para 16-4).

- a. Commanders and directors of Army Commands (ACOMs), Army Service Component Commands (ASCCs), Direct Reporting Units (DRUs), field operating agencies and Chief, National Guard Bureau (NGB) are responsible for the inspection and maintenance of all vehicle support stands which are authorized his/her command and will delegate the responsibility to the appropriate support activity to perform these services.
- b. The Chief, Safety Office, or the military equivalent, i.e., safety officer, will assist/advise the commander and supervisors in establishing standard operating procedures for inspection of vehicle support stands. Qualified safety and occupational health professionals or specially trained personnel will conduct workplace safety inspections at least annually (reference AR 385-10, para 17-6).
- c. Supervisors are responsible for conducting periodic, documented inspections of their work area to identify hazards (reference AR 385-10, para 17-3). Immediate supervisors of operations that use vehicle support stands shall:
  - (1) Ensure that appropriate safety and occupational health training is provided.
  - (2) Ensure that operators perform inspections of vehicle support stands prior to use as required.
  - (3) Enter each vehicle support stand into the automated Standard Army Management Information Systems (STAMIS) (<http://www.cascom.army.mil/esd/stamis/>) and add to service schedule with an interval of '**S**' (**semi-annual**).

**6. Responsibilities – Continued.**

- (4) A complete inspection of stands will be performed every 6 months. Periodic inspections must include the items in the PMCS table as well as the requirements of any applicable publication or manufacturer's recommendations.

**7. Product Requirements.**

- a. Army Items. To obtain the U.S. Army's five (5) ton vehicle support stand(s), NSN 4910-00-262-0392 or the seven (7) ton stand(s), NSN 4910-00-251-8013, submit a funded MILSTRIP requisition(s). Requisitions should be submitted IAW AR 725-50. If a vehicle support stand has a U.S. Army data plate affixed, with a contract number stamped on the data plate, the stand has been tested and a Certificate of Conformance (COC) is not required.

**WARNING**



**VEHICLE SUPPORT STAND HAZARDS**

**The use of locally purchased stands using straight pins inserted through base and column to hold up load is not recommended. Pin substitution is unsafe and could result in stand failure, causing severe injury or death to user.**

- b. Commercial Items. Only vehicle support stands that have been manufactured to meet or exceed the safety guidelines of AMSE PALD Standards, Part 4 shall be purchased and used. Local purchasers of commercial stands shall require suppliers of the stands to provide proof of a qualified load test either from the manufacturer or a testing facility. The COC with the load testing certification required for locally purchased stands will be maintained by the unit.
- c. Vehicle Support Stand Markings. Refer to Appendix B.

**8. Preventive Maintenance Checks and Services (PMCS).**

**WARNING**



**VEHICLE SUPPORT STAND HAZARDS**

**The use of damaged, corroded or otherwise defective stands could result in stand failure, causing severe injury or death to user. Always inspect stands prior to use.**

- a. General. Preventive Maintenance Checks and Services (PMCS) are performed to keep the equipment in operating condition. The checks are used to find, correct, or report problems. Users are to perform the PMCS procedures as shown in the PMCS table. PMCS are done every day the equipment is operated, using the PMCS table. Additionally, users must perform a complete inspection of all stands as shown in the PMCS table. This inspection will be conducted semi-annually as a part of the periodic inspections.
- b. Semi-Annual Inspection. Maintenance personnel must perform a complete inspection of all stands semi-annually (at least once every 6 months) as a part of periodic inspections.

**8. Preventive Maintenance Checks and Services (PMCS) – Continued.**

c. Preventive Maintenance Checks and Services (PMCS) - Explanation of Columns.

- (1) Item NO. Column. Checks and services are numbered in chronological order regardless of interval. This column is used as a source of item number for the "TM Number" column on DA Form 2404 in recording results of PMCS.
- (2) Interval Column. This column tells you when and how often to do a certain check or service. More than one interval may be placed in a column, which would mean you would do that check or service at each of those intervals.
- (3) Item to be Checked Column. This column lists the common name of the item to be inspected (such as "Base").
- (4) Procedure Column. This column tells you how to do the required checks or services, and what to do if the inspection fails.
- (5) Equipment Not Ready/Available If Column. This column tells you when and why your equipment cannot be used.

d. If Your Equipment Fails Inspection.

- (1) Criteria for Failure. Any stand that appears to be damaged in any way, is found to be worn, or operates abnormally SHALL BE REMOVED FROM SERVICE. No repairs to the stand base, column, saddle, or pawl are authorized. Signs of repair will be cause for immediate rejection and disposal.
- (2) Reporting. Report any deficiencies using DA Form 2404 (or equivalent) and tag it with DA Form 2402. If the item is an Army item, also report failures on SF 368 (refer to AR 702-7 and DA PAM 750-8).
- (3) Disposition. Those stands that fail inspection must be identified, segregated from other stands, and be disabled to preclude usage. The defective stands will be disposed of in a timely manner in accordance with local disposal policies. Replacement stands can be ordered through appropriate supply channels.

PMCS Table

ITEM NO.	INTERVAL	ITEM TO BE CHECKED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
<p><b>WARNING</b></p>  <p><b>VEHICLE SUPPORT STAND HAZARDS</b></p> <p><b>The use of damaged, corroded or otherwise defective stands could result in stand failure causing severe injury or death to user. Always inspect stands prior to use.</b></p>				
1	BEFORE & 6 MONTHS	Base	Inspect the stand for the required legible safety markings.	There are no safety markings.
2	BEFORE & 6 MONTHS	Base	Check the base for bends, separated welds, cracks, corrosion, damaged, loose, or missing parts, excessive wear or other evidence of mishandling.	There are any visible breaks, bends, cracks, corrosion, wear or missing parts.
3	BEFORE & 6 MONTHS	Column and Saddle	Check column and saddle for bends, corrosion, missing teeth on the rack or excessive wear.	Column is bent; saddle is visibly leaning over sideways; corrosion; missing teeth or wear.
4	BEFORE & 6 MONTHS	Pawl and Handle	Pawl should not be visibly bent or have any visible cracks. Engagement areas will be free of dirt, debris, and excessive wear.	The handle is broken; pawl is bent.
5	BEFORE & 6 MONTHS	Column and Pawl	Perform a functional test of the column and pawl prior to use to ensure complete and proper engagement of teeth. Manually operate pawl to ensure it moves freely. Manually operate column up and down to ensure it engages the pawl by force of gravity alone. If there is any doubt concerning the reliability of the stand, it should be replaced.	The column rack does not engage pawl by force of gravity alone.

PMCS Table - Continued

ITEM NO.	INTERVAL	ITEM TO BE CHECKED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
6	DURING	Entire Stand	Check to see that the lifted item, usually a vehicle, bears its weight in the middle of the saddle and that all legs of the stand touch the ground.	The load is not centered on the saddle or one leg does not touch the ground.
7	DURING	Entire Stand	Each stand shall be inspected immediately if the device is believed to have been subject to an abnormal load or shock.	Remove immediately from service if any abnormality is found.

9. Operation and Use.

**WARNING**



**VEHICLE SUPPORT STAND HAZARDS**

**Study, understand and follow all instructions before operating this device. Failure to heed these instructions may result in property damage and/or personnel injury or death:**

- **Under-vehicle work shall use a certified vehicle hoist (preferred) or vehicle support stands in combination with blocking and shoring.**
  - **Do not exceed rated capacity.**
  - **Use only on a hard level surface.**
  - **Center load on saddle.**
  - **Use as a matched pair to support each end of the vehicle.**
  - **No alterations shall be made or attachments added to this product.**
- a. Follow the instructions in your vehicle's TM for the required size of stand and the proper placement of vehicle stands under the vehicle.
  - b. Make sure the stands are on level ground and standing up straight. Ensure that the rack and pawl are fully engaged before and after the load is applied.
  - c. Apply the load so as to prevent any lateral forces on stands. Lateral forces usually occur when the vehicle is being lifted for the placement of another stand. The first stand that is already in position is the stand that receives the lateral forces as the vehicle suspension system adjusts to further changes in height. Support stand failures frequently occur when they are pushed over sideways by the vehicle itself.
  - d. Never place a stand under the independent suspension system, as this could generate lateral forces causing the stand to tip over. Lift/support a vehicle with independent suspension by the vehicle frame; wheels should hang free.
  - e. The stability of the vehicle, in conjunction with the appropriate placement of the stands, must be checked prior to any personnel initiating vehicle maintenance procedures. Once the load is applied and settled, no rocking is allowed.



## **TB 43-0156**

### **APPENDIX A**

#### **REFERENCES**

- a. Occupational Safety and Health Administration (OSHA) Standards (<http://www.osha.gov/>), Title 29 Code of Federal Regulations (CFR), Part 1960 Basic Program Elements for Federal Employees OSHA.
- b. AR 385-10, The Army Safety Program.
- c. DA PAM 385-10, Army Safety Program.
- d. DA PAM 385-30, Mishap Risk Management.
- e. DA PAM 385-40, Army Accident Investigations and Reporting.
- f. AR 700-138, Army Logistics Readiness and Sustainability.
- g. AR 702-7, Product Quality Deficiency Report Program.
- h. AR 702-7-1, Reporting of Product Quality Deficiencies Within the U.S. Army.
- i. AR 725-50, Requisition, Receipt, and Issue System.
- j. AR 750-1, Army Materiel Maintenance Policy.
- k. DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual.
- l. DA Form 2402, Maintenance Tag.
- m. DA Form 2404, Equipment Inspection and Maintenance Worksheet.
- n. SF 368, Product Quality Deficiency Report.
- o. ASME PALD-2005, Safety Standard for Portable Automotive Lifting Devices, American Society of Mechanical Engineers (ASME).
- p. ANSI Z535.4, American National Standard for Product Safety Signs and Labels, American National Standards Institute (ANSI).

APPENDIX B

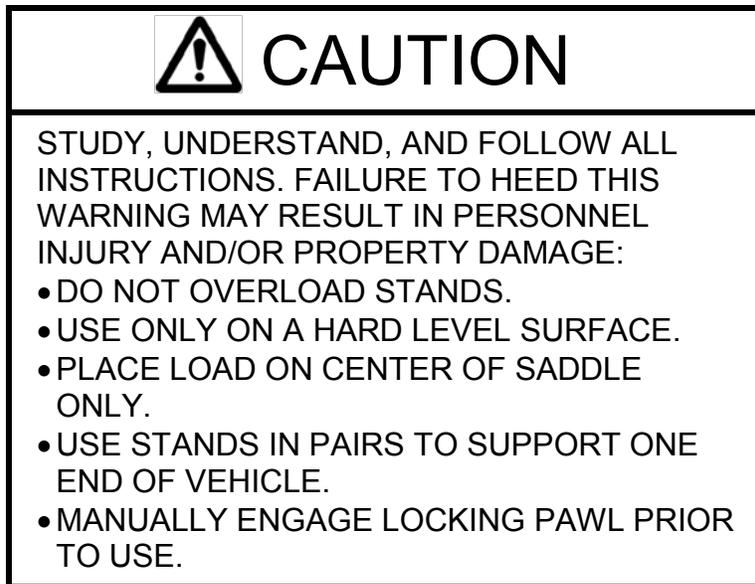
VEHICLE SUPPORT STAND MARKINGS

Each vehicle support stand should include product and safety markings developed by the manufacturer or supplier. All markings should be in accordance with ASME Safety Standard for Portable Automotive Lifting Devices (PALD) and ANSI Z535.4.

- a. The product markings should include the rated capacity, original manufacturer and date of manufacture either stamped or on a firmly attached data plate. An example of product markings follows:

NSN 4910-00-251-8013  
US Army Contract No. or Date of Manufacture  
Name of the Manufacturer  
VEHICLE SUPPORT STAND  
7 TON CAPACITY, (Part No.)

- b. In addition to product markings, each vehicle support stand should have safety markings as a sign or adhesive label. An example of safety markings follows:



<b>RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS</b> For use of this form, see AR 25-30; the proponent agency is ODISC4.						Use Part II (reverse) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE Date you filled out this form.
TO: <i>(Forward to proponent of publication or form) (Include ZIP Code)</i> U.S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 1 Rock Island Arsenal, Rock Island, IL 61299-7630						FROM: <i>(Activity and location) (Include ZIP Code)</i> Your mailing address	
<b>PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS</b>							
PUBLICATION/FORM NUMBER TB 43-0156						DATE 15 JULY 2010	Title Safety Inspection and Operation of Stand, Vehicle Support: 5 Ton and & Ton
ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON (Provide exact wording of recommended changes, if possible).	
	9					TB reference number is incorrect	
							
<i>*Reference to line numbers within the paragraph or subparagraph.</i>							
TYPED NAME, GRADE OR TITLE  <i>Your Name</i>						TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	Signature <i>Your Signature</i>

<b>TO: (Forward direct to addressee listed in publication)</b> U. S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 1 Rock Island Arsenal, Rock Island, IL 61299-7630	<b>FROM: (Activity and location) (Include ZIP Code)</b> Your address	<b>DATE</b> Date you filled out this form
--	---	--

**PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS**

<b>PUBLICATION NUMBER</b> TB 43-0156	<b>DATE</b> 15 July 2010	<b>TITLE</b> Safety Inspection and Operation of Stand, Vehicle Support: 5 Ton and 7 Ton
--------------------------------------	--------------------------	---

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION
<b>SAMPLE</b>								

**PART III – REMARKS** (Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)

<b>TYPED NAME, GRADE OR TITLE</b> Your Name	<b>TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION</b>	<b>SIGNATURE</b> Your Signature
--	---	------------------------------------



<b>TO: (Forward direct to addressee listed in publication)</b> U. S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 1 Rock Island Arsenal, Rock Island, IL 61299-7630	<b>FROM: (Activity and location) (Include ZIP Code)</b>	<b>DATE</b>
--	---	-------------

**PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS**

PUBLICATION NUMBER TB 43-0156				DATE 15 July 2010			TITLE Safety Inspection and Operation of Stand, Vehicle Support: 5 Ton and 7 Ton	
PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

**PART III – REMARKS** (Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
----------------------------	--	-----------



<b>TO: (Forward direct to addressee listed in publication)</b> U. S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 1 Rock Island Arsenal, Rock Island, IL 61299-7630	<b>FROM: (Activity and location) (Include ZIP Code)</b>	<b>DATE</b>
--	---	-------------

**PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS**

PUBLICATION NUMBER TB 43-0156				DATE 15 July 2010			TITLE Safety Inspection and Operation of Stand, Vehicle Support: 5 Ton and 7 Ton	
PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

**PART III – REMARKS** (Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
----------------------------	--	-----------



<b>TO: (Forward direct to addressee listed in publication)</b> U. S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 1 Rock Island Arsenal, Rock Island, IL 61299-7630	<b>FROM: (Activity and location) (Include ZIP Code)</b>	<b>DATE</b>
--	---	-------------

**PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS**

PUBLICATION NUMBER TB 43-0156				DATE 15 July 2010			TITLE Safety Inspection and Operation of Stand, Vehicle Support: 5 Ton and 7 Ton	
PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

**PART III – REMARKS** (Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
----------------------------	--	-----------

By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.  
*General, United States Army*  
*Chief of Staff*

Official:

JOYCE E. MORROW  
*Administrative Assistant to the*  
*Secretary of the Army*  
1018002

DISTRIBUTION: To be distributed in accordance with the initial distribution number (IDN) 344849 requirements for TB 43-0156.







THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meter = 0.3937 Inch  
 1 Decimeter = 10 Centimeters = 3.94 Inches  
 1 Meter = 10 Decimeters = 100 Centimeters  
           = 1000 Millimeters = 39.37 Inches  
 1 Dekameter = 10 Meters = 32.8 Feet  
 1 Hectometer = 10 Dekameters = 328.08 Feet  
 1 Kilometer = 10 Hectometers = 1000 Meters  
               = 0.621 Mile = 3,280.8 Feet  
 Millimeters = Inches times 25.4  
 Inches = Millimeters divided by 25.4

WEIGHTS

1 Centigram = 10 Milligrams = 0.154 Grain  
 1 Decigram = 10 Centigrams = 1.543 Grains  
 1 Gram = 0.001 Kilogram = 10 Decigrams  
           = 1000 Milligrams = 0.035 Ounce  
 1 Dekagram = 10 Grams = 0.353 Ounce  
 1 Hectogram = 10 Dekagrams = 3.527 Ounces  
 1 Kilogram = 10 Hectograms = 1000 Grams = 2.205 Pounds  
 1 Quintal = 100 Kilograms = 220.46 Pounds  
 1 Metric Ton = 10 Quintals = 1000 Kilograms = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liter = 0.034 Fluid Ounce  
 1 Centiliter = 10 Milliliters = 0.34 Fluid Ounce  
 1 Deciliter = 10 Centiliters = 3.38 Fluid Ounces  
 1 Liter = 10 Deciliters = 1000 Milliliters = 33.82 Fluid 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 = 0.155 Sq Inch  
 1 Sq Decimeter = 100 Sq Centimeters = 15.5 Sq Inches  
 1 Sq Meter (Centare) = 10 Sq Decimeters  
                               = 10,000 Sq Centimeters = 10.764 Sq Feet  
 1 Sq Dekameter (Are) = 100 Sq Meters = 1,076.4 Sq Feet  
 1 Sq Hectometer (Hectare) = 100 Sq Dekameters  
                                   = 2.471 Acres  
 1 Sq Kilometer = 100 Sq Hectometers  
                               = 1,000,000 Sq Meters = 0.386 Sq Mile

CUBIC MEASURE

1 Cu Centimeter = 1000 Cu Millimeters = 0.061 Cu Inches  
 1 Cu Decimeter = 1000 Cu Centimeters = 61.02 Cu Inches  
 1 Cu Meter = 1000 Cu Decimeters  
               = 1,000,000 Cu Centimeters = 35.31 Cu Feet

TEMPERATURE

5/9 (°F - 32°) = °C  
 (9/5 x °C) + 32° = °F  
 -35° Fahrenheit is equivalent to -37° Celsius  
 0° Fahrenheit is equivalent to -18° Celsius  
 32° Fahrenheit is equivalent to 0° Celsius  
 90° Fahrenheit is equivalent to 32.2° Celsius  
 100° Fahrenheit is equivalent to 38° Celsius  
 212° Fahrenheit is equivalent to 100° Celsius

APPROXIMATE CONVERSION FACTORS

<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>	<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>
Inches.....	Centimeters.....	2.540	Centimeters.....	Inches.....	0.394
Feet.....	Meters.....	0.305	Meters.....	Feet.....	3.280
Yards.....	Meters.....	0.914	Meters.....	Yards.....	1.094
Miles.....	Kilometers.....	1.609	Kilometers.....	Miles.....	0.621
Square Inches.....	Square Centimeters.....	6.451	Square Centimeters.....	Square Inches.....	0.155
Square Feet.....	Square Meters.....	0.093	Square Meters.....	Square Feet.....	10.764
Square Yards.....	Square Meters.....	0.836	Square Meters.....	Square Yards.....	1.196
Square Miles.....	Square Kilometers.....	2.590	Square Kilometers.....	Square Miles.....	0.386
Acres.....	Square Hectometers.....	0.405	Square Hectometers.....	Acres.....	2.471
Cubic Feet.....	Cubic Meters.....	0.028	Cubic Meters.....	Cubic Feet.....	35.315
Cubic Yards.....	Cubic Meters.....	0.765	Cubic Meters.....	Cubic Yards.....	1.308
Fluid Ounces.....	Milliliters.....	29.573	Milliliters.....	Fluid Ounces.....	0.034
Pints.....	Liters.....	0.473	Liters.....	Pints.....	2.113
Quarts.....	Liters.....	0.946	Liters.....	Quarts.....	1.057
Gallons.....	Liters.....	3.785	Liters.....	Gallons.....	0.264
Ounces.....	Grams.....	28.349	Grams.....	Ounces.....	0.035
Pounds.....	Kilograms.....	0.454	Kilograms.....	Pounds.....	2.205
Short Tons.....	Metric Tons.....	0.907	Metric Tons.....	Short Tons.....	1.102
Pound-Feet.....	Newton-Meters.....	1.356	Newton-Meters.....	Pound-Feet.....	0.738
Pound-Inches.....	Newton-Meters.....	0.11375	Kilopascals.....	Pounds per Square Inch.....	0.145
Pounds per Square Inch.....	Kilopascals.....	6.895	Kilometers per Liter.....	Miles per Gallon.....	2.354
Ounce-Inches.....	Newton-Meters.....	0.007062	Kilometers per Hour.....	Miles per Hour.....	0.621
Miles per Gallon.....	Kilometers per Liter.....	0.425	°Fahrenheit.....	°Celsius.....	°C = (°F-32)x5/9
Miles per Hour.....	Kilometers per Hour.....	1.609	°Celsius.....	°Fahrenheit.....	°F = (9/5x°C)+32

**PIN: 083229-000**