INCH-POUND

KKK-W-291G
22 January 2016
SUPERSEDING
KKK-W-291F
15 January 1985

FEDERAL SPECIFICATION

WHEELBARROWS

This specification is approved for use by all departments and Agencies of the Department of Defense

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers wheelbarrows for commercial, institutional, and home use in transportation of construction and other materials.

1.1.1 Federal specification coverage. Federal specifications do not include all varieties of the commodity as indicated by the title of the specification or which are commercially available, but are intended to cover only those generally used by the Federal Government.

1.2 Classification.

1.2.1 Types, classes, and styles. Wheelbarrows covered by this specification will be of the following types, classes, and styles as specified (see 6.2):

Type I - General utility.
  Class 2 - Large capacity.
    Style A - Steel pipe or tube frame and handles,
    Style B - Wood frame and handles.

Type II - Contractors.
  Class 1 - General purpose.
  Class 2 - Concrete.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Government publications. This issues of the following documents, in effect on date of invitation for bids or solicitation for offers, form a part of this specification to the extent specified herein:

Comments, suggestions, or questions on this document should be addressed to DLA Troop Support – Industrial Hardware Division (ATTN: Code FHTE), 700 Robbins Avenue, Philadelphia, PA 19111-5096 or email trpsptspecspa@dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at https://assist.dla.mil .

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SPECIFICATIONS

FEDERAL

FF-R-556 - Rivet, Solid, Small; Rivet, Split, Small; Rivet Tubular, Small; Burr; and Cap, Rivets; General Purpose.

FED-STD-123 - Marking for Domestic Shipment (Civil Agencies).

(Activities outside the Federal Government may obtain copies of Federal specifications, standards, and commercial item descriptions, as outlined under General Information in the Index of Federal Specifications, Standards, and Commercial Item Descriptions. The Index, which includes cumulative bimonthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. (Single copies of this specification, other Federal specifications, and commercial item descriptions required by activities outside the Federal Government for bidding purposes are available without charge from General Services Administration Business Service Centers in Boston, MA; New York, NY; Philadelphia, PA; Washington, DC; Atlanta, GA; Chicago, IL; Kansas City, MO; Fort Worth, TX; Houston, TX; Denver, CO; San Francisco, CA; LOS Angeles, CA; and Seattle, WA.

(Federal Government activities may obtain copies of Federal standardization documents and the Index of Federal Specifications, Standards, and Commercial Item Description from established distribution points in their agencies.)

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STANDARDS

MIL-STD-129 - Marking for Shipment and Storage.

(Copies of these documents are available online at http://quicksearch.dla.mil/ or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2 Other publications. The following document(s) form a part of this specification to the extent specified herein. The issues of the documents which are indicated as DoD adopted will be the issue listed in the current DODISS and the supplement thereto, if applicable.

ASTM International Standards:

ASTM A36/A36M - Standard Specification for Carbon Structural Steel.

ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings

ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

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ASTM A108	- Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished.
ASTM-A519	- Standard Specification for Seamless Carbon and Alloy Steel Mechanical Tubing.
ASTM-A575	- Standard Specification for Steel Bars, Carbon, Merchant Quality, M-Grades
ASTM-A1008/A1008M	- Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable
ASTM-A1011/A1011M	- Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High- Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength
ASTM-D4442	- Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood- Base Materials

(Copies of these documents are available from http://www.astm.org or the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

American Society for Quality (ASQ):

ASQ Z1.4	- Sampling Procedures and Tables for Inspection by Attribute.

(Copies of these documents are available from http://asq.org or the American Society for Quality, 644 North Plankinton Ave., Milwaukee, WI44 North Plankinton Ave., Milwaukee, WI 53203.)

SAE International

SAE-AMS-T-22085	- Tapes, Pressure-Sensitive, Adhesive, Preservation and Sealing

(Copies of these documents are available from http://sae.org or from SAE International, 4700 Commonwealth Drive, Warrendale PA 15096-0001)

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3. REQUIREMENTS

3.1 Description. The wheelbarrow is a hand-propelled vehicle and shall have a single wheel between the end of a pair of shafts that support the tray and form into handles at the other end, with two legs for support when standing alone. The wheelbarrow shall be equipped with a steel-spoked wheel with steel-rim tire or a rubber-tired steel disc wheel having a pneumatic or semipneumatic tire, as specified (see 3.4.2).

3.2 First article. Unless otherwise specified (see 6.2), the contractor shall furnish one or more wheelbarrows and wood specimens (see 4.1.2) for examination and testing within the time frame specified, to prove prior to starting production that his production methods and choice of design detail will produce wheelbarrows that comply with the requirements of this specification. Examination and tests shall be as specified in section 4; and, unless otherwise specified herein, all examinations and tests shall be conducted by the contractor subject to surveillance and approval by the Government (see 6.3). When specified (see 6.2), the Government will conduct any or all of the first article examinations and tests, as specified (see 6.2). The first article models shall be manufactured in the same facilities to be used for the manufacture of production items.

3.3 Materials. Materials shall be as specified herein. Materials not specified shall be selected by the contractor, and shall be subject to all provisions of this specification.

3.3.1 Steel.

3.3.1.1 Sheet and strip. The steel sheet and strip shall conform to the mechanical properties as specified in ASTM A1008/A1008M or ASTM A1011/A1011M.

3.3.1.2 Tubing. The steel tubing shall be any composition from 1010 through 1020, round seamless hot-rolled (HR) or cold-drawn (CD) and shall conform to the mechanical properties specified in ASTM A519.

3.3.1.3 Pipe. Steel pipe shall conform to ASTM A53/A53M.

3.3.1.4 Channel, steel. The steel channel shall conform to ASTM A36/A36M.

3.3.1.5 Cast malleable iron. The cast malleable iron shall conform to ASTM A47, grade 35018.

3.3.1.6 Rivets. The rivets shall be steel and shall conform to FF-R-556, type VI, grade E.

3.3.1.7 Bar. The steel bar shall conform to ASTM A108, grade 1010-1020, cold finish or ASTM A 575, grade M1010-M1020, merchant quality.

3.3.2 Wood.

3.3.2.1 Species. Wood shall be one of the following species: White ash, beech, yellow birch, rock elm, hickory, locust, hard maple, Malaysian hardwood, oak, or pecan. The wood shall be seasoned to not more than 15 percent moisture content at the time of fabrication when tested as specified in 4.5.2.1.

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3.3.2.2 Handles and risers. Wood shall be free of decay, splits, checks, shakes over 4 inches long, holes over .125 (1/8) inch in diameter, and knots except that sound, tight knots not over .500 (1/2) inch diameter spaced at not less than 6 inches apart will be allowed. Slope of grain shall not exceed 1 in 10 inches.

3.4 Construction.

3.4.1 Trays. The trays shall be fabricated of sheet steel as specified in 3.3.1.1 and may be either cut-and-folded or one-piece construction. Cut-and folded trays may be riveted, welded, or riveted and welded.

3.4.1.1 Margin or lap. When trays are riveted, the margin or lap (the distance from the edge of the sheet to the center of the line or rivets nearest the edge) shall be not less than 1-1/2 times the diameter of the rivet. All rivets shall be as specified in 3.3.1.6 and shall be of sufficient length to provide for the forming of a full head.

3.4.1.2 Reinforcement of edges. The top edges of the trays shall be stiffened either by beading or by rolling, shall be smoothly finished, and shall measure not less than .375 (3/8) inch in diameter.

3.4.1.3 Tray capacities. The struck and heaped capacities of the trays shall be as specified in table II, when tested as specified in 4.5.2.4.

3.4.1.4 Tray dimensions. Dimensions of the trays shall be in accordance with table I as indicated by the dimensional symbols shown in table I and on figure I (see 6.4).

3.4.2 Wheels. Wheelbarrows shall be equipped with a steel spoked wheel with a steel rim tire or a rubber tired steel disc wheel, as specified (see 6.2). Wheel hubs shall be cast iron or steel and shall be 6.000 to 7.500 (7-1/2) inches in length. Spoke wheels shall have not less than eight spokes. Spokes shall be welded or flush riveted and upset or notched under the tire with the shoulders against the inside of the tire. The rubber tired disc wheels shall be equipped with pneumatic or semipneumatic tires, as specified (see 6.2). Wheel shall be furnished with roller, ball, or plain bearings. Wheels shall be mounted on steel axles of not less than .500 (1/2) inch diameter for class 1 wheelbarrows and not less than .625 (5/8) inch diameter for class 2 wheelbarrows.

3.4.2.1 Steel rim tires. Steel rim tires shall have a nominal outside diameter of 16 inches, width not less than 1.500 (1-1/2) inches, and shall be not less than .312 (5/16) inch thick.

3.4.2.2 Pneumatic rubber tires. Pneumatic rubber tires shall be either tube tires furnished complete with inner tube or tubeless tires, as specified (see 6.2). The nominal outside diameter shall be 16 inches, and the nominal cross-sectional diameter shall be 4 inches. The tires shall have not less than 2 plies or 2-ply rating. All plies shall be smoothly and evenly laid and shall be free from buckles, wavy cords, air pockets, and cracks.

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3.4.2.3 Semipneumatic rubber tires. Semipneumatic rubber tires shall be hollow rubber tires (see 6.2) having 3 nominal outside diameter of 16 inches and a nominal cross-sectional diameter of 4 inches. The tire shall show no evidence of cracks, tears cuts, slits, or distorted tread.

3.4.2.4 Wheel brackets. Wheel brackets, where specified herein, shall be located on the underside of the frame on all wheelbarrows and shall be securely bolted to the frame by one or two bolts through each end of each bracket, or for tubular frames the brackets may be welded to the frame. The brackets shall be steel as specified in 3.3.1.1 or cast malleable iron as specified in 3.3.1.5.

3.4.3 Legs. Legs shall be V-shaped with the end fastened securely to the frame or tray. The legs shall be channel steel or tubing as specified (see 6.2) and with bracing securely fastened to hold each leg in a rigid position. Channel steel legs shall be reinforced with steel bearing plates or shoes riveted, welded, or securely fastened to the bottom of each leg by other mechanical means. One wide-press-formed steel brace with reinforcing perimeter emboss interlocked at two points of each leg may be utilized.

3.4.4 Front braces. The front end of all trays shall be braced and held in position by two steel braces, each securely fastened to the frame and to the tray near the top.

3.4.5 Bolts. The minimum size of all bolts of type I wheelbarrows shall be .250 (1/4) inch diameter. The minimum size of all bolts for type II wheelbarrows shall be .312 (5/16) inch diameter. The minimum diameter for heads of bolts extending through the tray shall be .562 (9/16) inch for type I wheelbarrows and .687 (11/16) inch for type II wheelbarrows. The maximum thickness of the head shall be .187 (3/16) inch. All bolts through wood members shall be provided with washers on the nut end.

3.4.6 Type I wheelbarrows. Type I wheelbarrows shall consist of a tray, wheel brackets, frame and handles, legs, tray braces, and front braces and shall conform to requirements specified herein.

3.4.5.1 Frame and handles. The frame and handles shall be in accordance with 3.4.6.1.1 or 3.4.6.1.2 as specified (see 1.2.1).

TABLE I. Dimensions of steel tray in inches.

Type and Class		Length of Top-A	Width of Top		Length of Slant		Vertical Depth of Front-F	Length of Bottom-G	Width of Bottom	
			Front-B	Rear-C	Front-D	Rear-E			H	J
Type	Class	Max	Max	Max	Max	Max	Max	Max	Max	Max
I										
	2	44.00	34.00	33.00	24.50	11.00	18.25	24.00	18.50	19.00
II	1	40.00	31.00	29.50	18.75	9.00	14.00	23.50	16.00	20.00
	2	41.00	29.00	28.00	24.00	11.00	18.00	24.00	18.50	21.00

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TABLE II. Physical characteristics.

Type and Class		Capacity in Cubic Feet		Minimum Tray Thickness
		Struck	Heaped	
Type	Class	Min	Max	Inch
I				
	2	3.00	5.00	.0598 (16 Gage)
II	1	2.00	4.00	.0598 (16 Gage)
	2	3.00	5.00	.0598 (16 Gage)

3.4.6.1.1 Steel pipe or tube frame and handles. The frame shall be fabricated of one-piece steel tubing or pipe as specified in 3.3.1.2 or 3.3.1.3, bent in the middle around the front of the barrow wheel, the ends extending toward the rear forming two handles; or may be two-piece, each handle extending past the front of the wheel, bent upward, and securely attached to the tray. The dimensions of the pipe or tubing shall be as shown in table III. The handle shall be not less than 54 inches nor more than 64 inches long. The front part of the handle shall be approximately 9 inches from the center of the wheel. The handle shall extend not less than 24 inches from the legs.

TABLE III. Dimensions of pipe or tubing.

	Diameter nominal	
	Inside Inches	Outside Inches
Pipe	1.049	1.315
Tubing	1.060	1.250

3.4.6.1.2 Wooden frame and handles. When wheelbarrows are constructed with wooden handles, the handles shall be as specified in 3.4.7.1. Each wheelbarrow shall be provided with a wheel guard in accordance with 3.4.7.2. Risers when provided shall be in accordance with 3.4.7.1.

3.4.6.2 Tray braces. The tray shall be secured directly to the frame or shall be supported by two or more steel straps which pass horizontally across the frame and are spaced to give support to the bottom of the tray. These straps shall be so secured to the frame as to preclude the possibility of their working loose under all service conditions specified herein. The straps shall be of steel as specified in 3.3.1.1 and be not less than .187 (3/16) by 1.250 (1-1/4) inches in cross section. The tray shall be fastened to the frame or steel straps in at least four places spaced widely and symmetrically with respect to the underside outline of the tray.

3.4.6.3 Type I, class 2, large capacity. Type I, class 2 wheelbarrows shall be similar to figure 1 and shall have the capacity shown on table II.

3.4.6.3.1 Legs. legs shall be fabricated from 1.50 (1-1/2) by .437 (7/16) by .125 (1/8) inch steel channel as specified in 3.3.1.4 of the design specified in 3.4.3. The legs shall be bolted to the bottom of the handles by four bolts which pass through the handles and tray.

3.4.7 Type II contractors wheelbarrows. The type II wheelbarrows shall consist of a tray, wheel, brackets, handles, legs and tray braces, front braces, and a wheel guard and shall conform to requirements specified herein.

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3.4.7.1 Handles and risers. Each handle shall be one or two pieces of hardwood as specified in 3.3.2.1, with a minimum cross section of 2.125 (2-1/8) by 1.75 (1-3/4) inches, and of a length not less than 54.00 nor more than 64.00 inches. Each handle shall extend riot less than 24.00 inches from the legs and shall be turned to a diameter of approximately 1.437 (1-7/16) inches or shaped for a length or not less than 6.00 nor more than 12.00 inches from the ends for handholds. The front ends of the handles shall extend approximately 9.00 inches beyond the center of the wheel to support the wheel guards. When required, wood risers (wedges) of the same material and width as the handles shall be placed butt end forward between the tray and the handles. The risers shall be approximately 2.00 inches high at the butt end and tapered to an edge at the other end.

3.4.7.2 Wheel guard. The front ends of the handles shall be securely fastened together by means of a device which also acts as a wheel guard. The device shall be fabricated of steel or malleable iron as specified in 3.3.1.1 or 3.3.1.5.

3.4.7.3 Type II, class 1 wheelbarrows. Type II, class 1 wheelbarrows shall be similar to figure 2 and shall conform to the requirements specified herein.

3.4.7.3.1 Legs. Legs shall be fabricated from 1.250 (1-1/4) by .375 (3/8) by .125 (1/8) inch steel channel as specified in 3.3.1.4 of the design specified in 3.4.3, or steel bar stock of not less than 1.250 (1-1/4) by .250 (1/4) inch as specified in 3.3.1.1. The legs shall be bolted to the bottom of handles by four bolts which shall pass through the handles and tray.

3.4.7.4 Type II, class 2 wheelbarrow. Type II, class wheelbarrows shall be similar to figure 3 and shall conform to the requirements specified herein.

3.4.7.4.1 Legs. Legs shall conform to the requirements specified in 3.4.6.3.1.

3.5 Performance.

3.5.1 Shock load. The wheelbarrows shall show no permanent deformation or failure of any part when tested as specified in 4.5.2.3.

3.6 Identification marking. Each wheelbarrow shall be marked with the contractor's name or trademark of such known character that the source of manufacture may be determined. Marking shall be in accordance with the contractors' standard practice.

3.7 Treatment and painting. Unless otherwise specified (see 6.2), the parts normally painted of the wheelbarrow shall be cleaned, treated and painted in accordance with the manufacturer's standard commercial practice.

3.8 Workmanship. All parts, components, and assemblies of the wheelbarrows including castings, forgings, molded parts, stampings, bearings, seals, machined surfaces, and welded parts shall be clean and free from sand, dirt, fins, pits, sprues, scale, flux, and other harmful extraneous material. External surfaces shall be free from burrs, sharp edges, and corners except when sharp edges and corners are required. No parts shall be damaged or impaired in any way, and parts shall show no evidence of rust, corrosion, or defects which would affect serviceability or appearance.

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4. VERIFICATION

4.1 Component and material inspection. The contractor is responsible for assuring that components and materials used are manufactured, examined, and tested in accordance with the requirements of referenced specifications and standards.

4.1.1 Testing of wood. Test shall be performed on representative specimen from each lot or batch of wood used in the fabrication of the wheelbarrow to determine compliance with this specification for the characteristics indicated in table IV. Three determinations shall be taken on each specimen, and results shall be the average of the three determinations. The acceptance quality level shall be as specified in table IV.

TABLE IV. Testing of wood.

Material	Characteristics	Requirement Paragraph	Test Paragraph	Specimen Size	Acceptable Quality Level	
					Accept	Reject
Wood	Moisture content	3.3.2.1	4.5.2.1	15 pcs	1	2
Wood	Slope of grain	3.3.2.2	4.5.2.2	5 pcs	0	1

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

a. First article inspection (see 4.3).
b. Quality conformance inspection (see 4.4).
c. Inspection of preparation for delivery {see 4.6).

4.3 First article inspection.

4.3.1 Examination. The first article wheelbarrow(s) shall be examined as specified in 4.5.1. Presence of one or more defects shall be cause for rejection of all first article wheelbarrows.

4.3.2 Tests. The first article wheelbarrow(s) shall be tested as specified in 4.5.2.1, 4.5.2.2, 4.5.2.3 and 4.5.2.4. Failure of any test shall be cause for rejection of all first article wheelbarrows.

4.4 Quality conformance inspection.

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4.4.1 Sampling. Unless otherwise specified herein, sampling for examination and test shall be in accordance with ASQ Z1.4. A lot shall consist of all wheelbarrows offered for acceptance at one time. The sample unit for this inspection shall be one fully assembled wheelbarrow.

4.4.2 Examination. Samples selected in accordance with 4.4.1 shall be examined as specified in 4.5.1. Inspection shall be level II with an AQL of 2.5 for major and 6.5 for total defects expressed in terms of defects per hundred units.

4.4.3 Tests. Samples selected in accordance with 4.4.1 shall be tested as specified in 4.5.2.1 and 4.5.2.3. Inspection level shall be S-2 with an AQL of 2.5 defects, expressed in terms of defects per hundred units.

4.5 Inspection procedure.

4.5.1 Examination. Wheelbarrows shall be examined as specified herein for the following defects:

Major

101. Finish not as specified.
102. Evidence of rust or corrosion.
103. Wood not free of decay, splits, checks, or shakes over 4 inches long, or holes over .125 (1/8) inch diameter.
104. Sound, tight knots over .50 (l/2) inch diameter and spaced less than 6 inches apart in wood or slope of grain exceeds 1 inch in 10 inches.
105. Wood species other than as specified or not correctly dressed.
106. Trays not correctly joined, stiffened, or formed as specified.
107. Components missing or not type specified.
108. Wheels not constructed as specified (see 3.4.2).
109. V-shaped legs not correctly secured to frame.
110. Tires not type specified; tire plies not smooth or correctly laid, not free of buckles, wavy cords, air pockets~ or other imperfections.
111. Weld missing, fractured, not fused, burnt holes.
112. Bolts, nuts, rivets, or washers missing, not correctly formed, broken, bent, twisted, stripped threads.
113. Dimensions not as specified.
114. Any burr, sliver, splinter, or other projections which could cause injury to personnel.
115. Wheel brackets not fastened as specified.
116. Materials not as specified.
117. Steel not as specified.
118. Sheet and strip not as specified.
119. Tubing not as specified.
120. Pipe not as specified
121. Channel, steel not as specified.
122. Cast malleable iron not as specified.
123. Bar not as specified.

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MINOR

201. Enamel not dry, smooth, or free from runs, sags, or foreign material.
202. Welding shows bubbles, porosity, granular surface. Excess flux and spatter not removed.
203. Bolts through wood not provided with washers on nut ends.
204. Identification marking missing, not legible, not as specified.

4.5.2 Tests.

4.5.2.1 Moisture content of lumber. Moisture content of lumber shall be determined in accordance with ASTM D4442, method optional. Nonconformance to 3.3.2.1 shall constitute failure of this test.

4.5.2.2 Slope of wood grain. Wood used for the handles and risers shall be tested for slope of grain. The slope of grain may be determined by combining the grain direction of two adjacent faces of a square or rectangular piece. When one of these faces is straight grained, the true slope of grain is shown on the other face. When there is a slope on both faces, the true or combined slope is greater than the slope on either face. Slope of grain is shown on edge grained faces by the summer wood bands, by the direction in which a free flowing ink or dye spreads, by the course taken by a narrow strip lifted by a knife point and torn out. Direction of fiber may also be measured by the Teco slope of grain detector manufactured by the Timber Engineering Company, Inc., Washington, DC, or equal. Nonconformance to 3.3.2.2 shall constitute failure of this test.

4.5.2.3 Shock load. The wheelbarrow shall be placed on a raised platform 4 inches high. The wheelbarrow shall be filled to its volumetric capacity with dried wheat or its equivalent for the type I wheelbarrow or with wet mixed concrete or other approximately equivalent material for type II wheelbarrow as applicable. The wheelbarrow shall be rolled completely off the raised platform at a minimum speed of 2 miles per hour (mph) onto a level concrete surface. This test shall be repeated 5 times. After completion of the test, the load shall be removed. Nonconformance to 3.5.1 shall constitute failure of this test.

4.5.2.4 Tray capacities. The struck and heaped volumetric capacities of the trays shall be measured to determine the tray capacities. The measurements shall be made with the tray installed as a part of the complete wheelbarrow assembly and with the wheelbarrow standing on a level surface. The struck capacity shall be determined by filling the tray with dried wheat or equivalent material leveled to the top edges of the tray. The wheat or material shall be removed from the tray and its volume determined. The heaped capacity shall be determined by filling the tray with dried wheat or equivalent material heaped to the point where the wheat or material begins to fall over the edges of the tray. The wheat or material shall be removed from the tray and its volume determined. Nonconformance to 3.4.1.3 shall constitute failure of this test.

4.6 Inspection of preparation for delivery.

4.6.1 Quality conformance inspection of pack.

4.6.1.1 Unit of product. For the purpose of inspection, a completed pack prepared for shipment shall be considered a unit of product.

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4.6.1.2 Sampling. Sampling for examination shall be in accordance with ASQ Z1.4.

4.6.1.3 Examination. Samples selected in accordance with 4.6.1.2 shall be examined for the following defects. AQL shall be 2.5 percent defective.

124.	Materials, methods, and containers not as specified for level A or B. Each incorrect material, method, or container shall be considered one defect.	
125.	Unprotected surfaces not preserved as specified for level A.	
126.	Hardware not placed in a box and immobilized as specified for level A.	
127.	Consolidation not as specified for level A.	
128.	Wheelbarrows not preserved and packed in accordance with the referenced document as specified for commercial.	
129.	Wheelbarrows of unlike description packed together for level A.	
130.	Quantities packed together exceed the weight limitation of the box as specified for level A.	
131.	Strapping not applied as specified for level A or B.	
132.	Marking missing, illegible, incorrect or incomplete for level A, level B, or commercial.	

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

6.1 Intended use. The wheelbarrow is intended for manual transport of small loads for short distances.

6.2 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in the procurement documents:

a. Title, number, and date of this specification.
b. Type, class, and style required (see 1.2.1).
c. When preproduction wheelbarrow(s) and wood specimens are not required (see 3.2).
d. Time frame required for submission of preproduction wheelbarrows and number of wheelbarrows to be furnished when applicable (see 3.2).
e. When the Government will conduct any or all of the preproduction model examination and tests. When the Government will conduct some but not all of the preproduction examination and tests, the contracting officer should specify which examinations and tests will be conducted by the Government and which examinations and tests will be conducted by the contractor (see 3.2).
f. Whether steel spoked wheels or rubber tired steel disc wheels are required (see 3.4.2).
g. Whether steel disc wheels are to be equipped with pneumatic or semipneumatic tires (see 3.4.2).

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h. Whether tube tires or tubeless tires are required (see 3.4.2.2).
i. Whether channel steel legs or tubing legs are required (see 3.4.3).
j. When treatment and painting other than as specified is required (see 3.7).
k. Degree of preservation and packing required (see 5.1 and 5.2).
l. When three wheelbarrows will be consolidated together (see 5.1.1.4).
m. Special marking when required (see 5.3.1 and 5.3.2).

6.3 First article. Any changes or deviations of production wheelbarrows from the approved first article model during production will be subject to the approval of the contracting officer. Approval of the first article model will not relieve the contractor of his obligation to furnish wheelbarrows conforming to this specification.

6.4 Information figures. Figures 1 through 4 show configurations for the wheelbarrows which have been found acceptable; however, the figures are included for illustration only and are not intended to preclude the furnishing of other wheelbarrows which conform to this specification.

6.5 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification will take precedence

6.6 Subject term (key word) listing.

Hand-propelled vehicle
Single wheeled
Utility

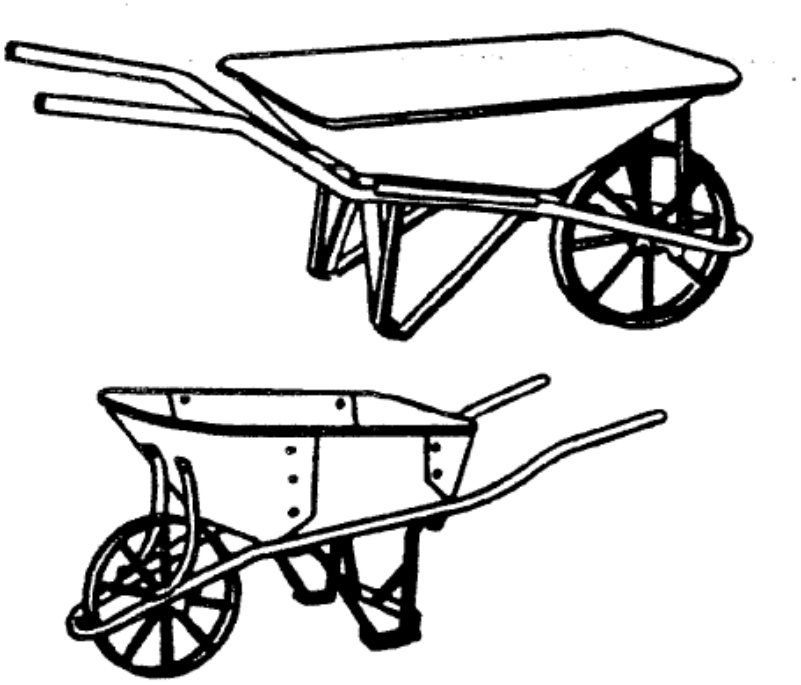


Figure 1. Type I class 2 wheelbarrow.

X-2100A

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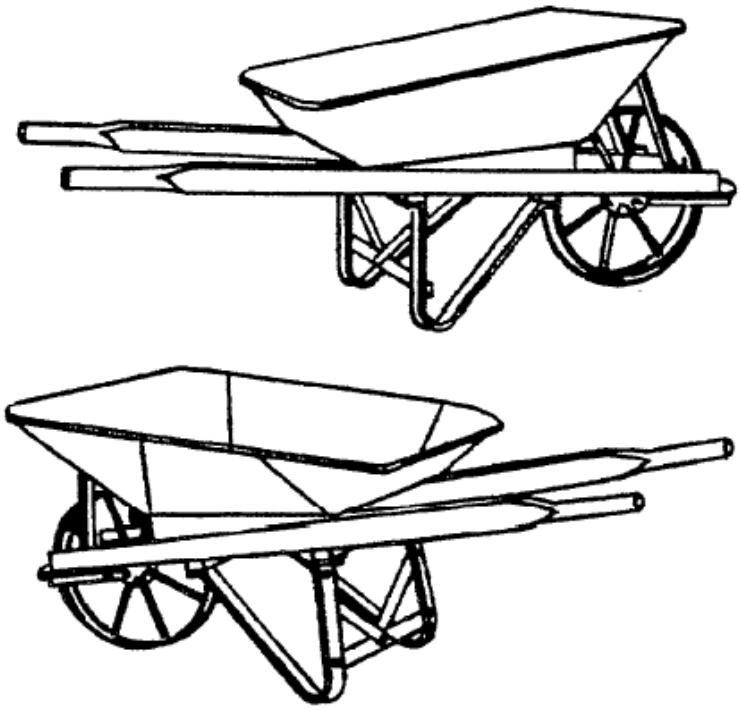


Figure 2. Type II class 1 wheelbarrow.

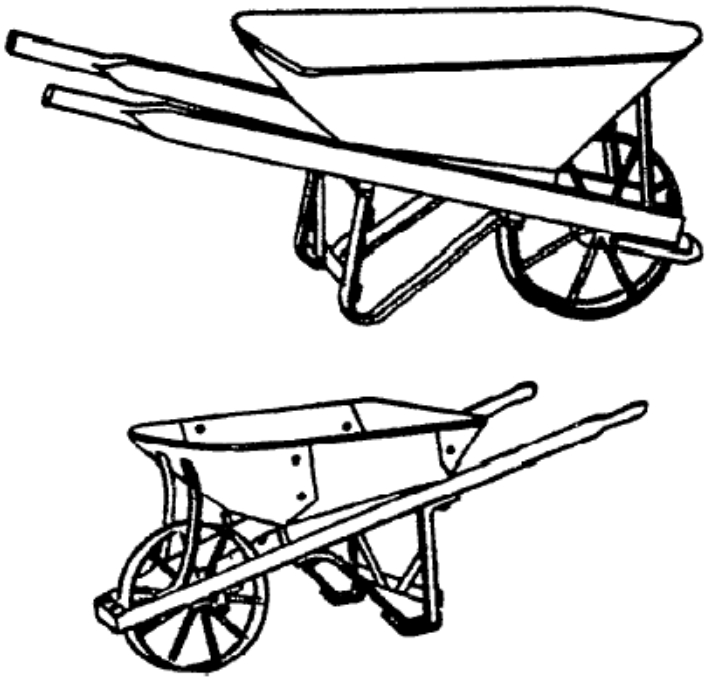


Figure 3. Type II class 2 wheelbarrow.

X2101

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6.7 Changes from previous issues. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodian:
Army - AT

Preparing Activity:
DLA - IS

(Project 3920-2013-001)

Review Activity:
Army – GL
Navy – MC

NOTE: The activities listed above were interested in this document as of the date of document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at https://assist.dla.mil.

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