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SUPERSEDING
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FEDERAL SPECIFICATION

SHEARS, METAL CUTTING; BENCH AND HAND

This specification was approved by the Commissioner,
Federal Supply Service, General Services
Administration, for use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers bench and hand shears used for cutting metal.

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, styles, and designs. The metal cutting shears shall be of the following types, classes, styles and designs, as specified (see 6.2):

Type I - Bench.
Class 1 - Single lever.
Class 2 - Compound lever.

Type II - Hand (snips).
Class 1 - Straight cut.
Style A - Heavy duty.
Style B - Medium duty.
Class 2 - Circular cut.
Style A - Heavy duty.
Style B - Medium duty.
Class 3 - Combination.
Class 4 - Compound lever. Steel blades (hot forged).
Design 1 - Straight cutting.
Design 2 - Circular cutting to right.
Design 3 - Circular cutting to left.

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issues in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

Federal Specification:

PPP-P-40 - Packaging and Packing of Hand Tools.

Federal Standard:

Fed. Std. No. 358 - Sampling Procedures.

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

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(Single copies of this specification and other Federal Specifications required by activities outside the Federal Government for bidding purposes are available without charge from Business Service Centers at the General Services Administration Regional Offices in Boston, New York, Washington, DC, Atlanta, Chicago, Kansas City, MO, Fort Worth, Denver, San Francisco, Los Angeles, and Seattle, WA.

(Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and the Index of Federal Specifications and Standards from established distribution points in their agencies.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply.

American Society for Testing and Materials (ASTM) Standard:

E 18 - Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials, Tests For.

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

3. REQUIREMENTS

3.1 Illustrations. The illustrations shown herein are descriptive and not restrictive and are included for the convenience of requisitioning and purchasing officers and manufacturers, and are not intended to preclude the purchase of metal cutting shears which are otherwise in accordance with this specification.

3.2 Design. Bench shears (type I) shall be designed for use with tinners' bench plates. Hand shears (snips) type II) shall be designed for normal hand operation. All shears except type I, class 2, and type II, class 4, compound lever, shall consist essentially of two cutting blades, two handles, and a bolt; type I, class 2, and type II, class 4, compound-lever shears shall have substantially the same components in addition to a series of levers and pins through which the compound leverage is accomplished. All shears shall meet the applicable tests specified in 4.4.

3.3 Material. Material shall be steel, except as otherwise specified herein. (See 3.10.2 and 3.11.4.3.)

3.4 Identification marking. All shears shall be marked in a plain and permanent manner with the manufacturer's name or with a trademark of such known character that the source of manufacture may be readily determined.

3.5 Finish. The bearing side of the blades and beveled portions adjacent to the cutting edges shall be smoothly ground and shall have a natural finish. The outer side of each blade and handle shall have a painted, lacquered, enameled, plated, or natural finish, at the option of the contractor.

3.6 Blades. Except for the cutting edges, all other blade corners and edges shall be smooth and rounded.

3.6.1 Blade cutting edges. Blade cutting edges shall be sharp, suitable beveled and properly hardened and tempered. Cutting edges shall be slightly crowned so that the proper cutting angle shall be maintained throughout the full length of cut. The cutting edges shall not fail when subjected to the cutting tests specified in the applicable tables and described in 4.3; failure being considered to have occurred when any of the following conditions exist after tests: Breaking, chipping or any deformation of the cutting edges, bending of the blades, or undue or excessive dulling of the cutting edge.

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3.6.2 Blade bearing and mating surfaces. Blade bearing and mating surfaces shall be ground true, shall be smooth, and of ample width to prevent the blades from twisting or springing open under ordinary cutting loads likely to be encountered in service.

3.7 Center bolt and tensioning nut. The center bolt and nut shall serve as a pivot joint holding the blades together and shall provide a means for blade adjustment, other than peening. The center bolt shall be prevented from rotating in one blade and permitted to rotate in the other. The tensioning nut shall be of a self-locking type, or jam type if the bolt is threaded into one blade.

3.7.1 Bolt material. The center bolt shall be of high shear strength steel having a bearing surface not rougher than 64 microinches. All bolts except the center bolt of type II, class 4, shears shall be made in accordance with one of the following optional requirements:

- (a) Hardened and tempered to a Rockwell hardness of not less than 30 nor more than 40 on the "C" scale.
- (b) Case hardened to a depth of 0.007 inch minimum and 0.015 inch maximum, and have a Rockwell hardness of not less than 83 nor more than 90 on the 15N scale (superficially).
- (c) Unhardened steel having a minimum strength (tensile) of 80,000 lbs. per sq. inch (P.S.I.).

3.7.1.1 The center bolt of type II, class 4, shears shall be alloy steel having a minimum tensile strength of 150,000 p.s.i. and a hardness of Rockwell C 32 to 39.

3.8 Handles. Handles shall be shaped to provide a smooth and comfortable grip for the hand. Handles shall be free from flash and irregular or sharp projections and edges. All type II shears shall be provided with handle stops arranged to preclude the possibility of the handles being closed beyond the effective blade-cutting point.

3.9 Length of cut. The length of cut specified in tables I, II, III, IV, V and VI shall be interpreted as the length of the cut that may be made in a single cutting operation in sheet steel of the minimum thickness specified in the applicable table for the respective type and size of shear tested. The shears shall be so designed that the cutting edges need not be opened more than 45 degrees (included angle) to obtain the length of cut specified in a single cutting operation.

3.10 Type I, bench shears. Type I shears shall be designed for use with tinner's bench plates, and blades shall have a Rockwell C hardness of from 50 to 60. Matching points on the blades of any one pair of shears shall be within 5 points (hardness).

3.10.1 Class 1, single-lever bench shears. Class 1 shears shall be of solid steel having .45 percent carbon (minimum) and shall be hot-forged integral with the handle. Shears shall have straight cut blades, comply with table I, be similar to figure 1, and be right hand cut unless left hand cut is specified (see 6.2).

3.10.2 Class 2, compound-lever bench shears. Shears shall be suitable for heavy duty and shall be of the compound lever style. The end of the lower handle shall be suitably formed for use in tinner's bench plates and the end of the upper handle shall terminate in a handle suitable for hand use. The blades shall be of steel having .45 percent carbon (minimum) and integral with the handles or removable and replaceable, at the option of the contractor. If removable blades are furnished, they shall be securely attachable and readily removable. On removable-blade shears, the handles shall be either steel or malleable iron, at the option of the contractor. Shears shall have straight-cut blades, comply with table II, be similar to figure 2, and be left-hand cut unless right hand cut is specified (see 6.2).

3.11 Type II, hand shears (snips). Unless otherwise specified (see 6.2), shears shall be designed for use by right-handed operators, left-hand cut (lower blade on left-hand side). A clearance shall be provided between the handles of the shears when the shears are in a closed position for the protection of the thumb and fingers of the operator.

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3.11.1 Class 1, straight cut. Shears shall be hot forged with integral blades and handles and shall be of the conventional style straight-cut tinner's shears (snips) and with bow-shaped handles. The blade pattern for the 16-inch size shear shall be either straight or combination pattern at the option of the contractor.

3.11.1.1 Style A, heavy duty. Style A shears shall be of either inlaid or solid steel construction. When inlaid construction is used, the inlaid piece for each blade shall be steel conforming to the requirements of this paragraph for solid construction, and shall be joined by welding blade and handle into an integral unit. When solid steel construction is used, blades and handles shall be of one of the following: (1) High carbon steel having 0.75 percent carbon (minimum); (2) Alloy steel with at least 0.60 percent carbon content, and at least a total of 0.20 percent alloying elements (excluding manganese); (3) Alloy steel with at least 0.48 percent carbon content, and at least a total of 0.95 percent alloying elements (excluding manganese). Blades shall have a Rockwell C hardness of from 55 to 61, and matching points on the blades of any one pair of shears shall be within 4 points (hardness). Style A shears shall be similar to figure 3 and shall comply with table III.

3.11.1.2 Style B, medium duty. Style B shears shall be of solid steel having .45 percent carbon (minimum). Blades shall have a Rockwell C hardness of from 50 to 60 and matching points on the blades of any one pair of shears shall be within 5 points (hardness). Style B shears shall be similar to figure 3 and shall comply with table III.

3.11.2 Class 2, circular cut. Shears shall be hot forged with integral blades and handles and be designed for making circular cuts in sheet metal within the capacity of the tool. The blades shall be curved to the left approximately on a 3-3/8 inch radius perpendicular to the cutting (shearing) plane. Shears shall have bow-shaped handles.

3.11.2.1 Style A, heavy duty. Style A shears shall comply with the requirements of 3.11.1.1 except shears shall be similar to figure 4 and shall comply with table IV.

3.11.2.2 Style B, medium duty. Style B shears shall comply with the requirements of 3.11.1.2 except shears shall be similar to figure 4 and shall comply with table IV.

3.11.3 Class 3, combination. Shears shall be hot-forged with integral blades and handles and shall be designed for cutting intricate patterns and curves having short radii with a minimum amount of bending of the metal being cut. The blades and cutting edges shall be properly curved in the cutting (shearing) plane. Shears shall be of solid steel having .45 percent carbon (minimum). Blades shall have a Rockwell C hardness of from 50 to 60 and matching points on the blades of any one pair of shears shall be within 5 points (hardness). Shears shall have bow-shaped handles, shall comply with table V, and shall be similar to figure 5.

3.11.4 Class 4, compound lever. Class 4 shears shall have serrated cutting blades and a compound leverage system. Suitable handles and a handle-locking device shall also be provided. All bolts and nuts shall be positioned and set so that the shears will be in proper adjustment.

3.11.4.1 Serrated cutting blades. The blades shall have serrated cutting edges and shall be curved in the cutting (shearing) plane. Serrations shall have a minimum depth of 0.005 inch and be evenly spaced and well-defined throughout the entire length of the cutting blade and shall meet the test specified in 4.3.5.6. Blades shall be designed to divert the sheared portion of metal away from the handles and be capable of passing the cutting test in 4.3.5.5.

3.11.4.2 Compound leverage. Class 4 shears shall use compound leverage to multiply the cutting force applied on the handles. Compound leverage shall consist of a series of bolts and linkage located between the center bolt and the gripping areas of the handles.

3.11.4.3 Handles. Handles shall be of either solid or formed construction. If handles of formed construction are furnished, the handles shall be U-shaped in section. The handles shall be of steel, semisteel, or other suitable metal and shall be of sufficient strength to withstand the test specified in 4.3.8. Handles shall also be provided with a suitable spring of sufficient strength to return the handles to the open position when the handle pressure is released.

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3.11.4.4 Handle locking device. A handle locking device shall be provided and designed so that it will not interfere with the operation of the shear. The locking device shall afford a quick, simple method for locking the handles in the closed position.

3.11.4.5 Center bolt and nut. The center bolt of class 4 shears shall be designed to:

- (a) Either pass through a body sized (round) hole in one blade, and then threaded through a tapped hole in the other side.
- (b) Or pass through a body sized (round) hole in one blade and then fitted to a hole in the other blade having at least one flat, or other means to prevent the bolt from rotating in the blade.

The center bolt and tensioning nut of class 4 shears shall comply with the applicable requirements of 3.7.

3.11.4.6 Proper adjustment. All class 4 shears shall be in proper adjustment, ready for use. Proper adjustment shall be interpreted as meaning that the blades shall open and close smoothly and easily without binding and shall be capable of passing the cutting tests in 4.3.5.4 and 4.3.6.

3.11.4.7 Overlap for jaw tips. The cutting edges at the tips of class 4 shears shall overlap up to a maximum of 1/16 inch when handles are pressed against the positive stops provided. Shears shall be capable of passing the cutting tests in 4.3.5.7.

3.11.5 Alloy steel blades. The blades shall be hot forged from steel meeting at least the minimum material requirements of 3.11.1.1. Blades shall have a Rockwell C hardness of from 55 to 61, and matching points on the blades of any one pair of shears shall be within 4 points (hardness). The bolts shall be of alloy steel (see 3.7.1.1).

3.11.5.1 Design 1, straight cutting. Design 1 shears shall be designed primarily for straight cutting but shall be capable of cutting intricate patterns and curves. Design 1 shears shall conform to the applicable requirements of table VI, and shall be similar to figure 6.

3.11.5.2 Design 2, circular cutting to right. Design 2 shears shall be designed for making circular cuts to the right, shall conform to the applicable requirements of table VI, and be similar to figure 7.

3.11.5.3 Design 3, circular cutting to left. Design 3 shears shall be designed for making circular cuts to the left, shall conform to the applicable requirements of table VI, and be similar to figure 8.

3.12 Workmanship. Shears shall be free from rust, burrs, fins, blisters, and other defects which may impair their durability, appearance, or serviceability.

3.12.1 Sample shears will be examined for the following:

- I. Overall appearance.
 1. Workmanship of a good commercial grade defined as follows:
 - a. Suitable machine tumbled or polished surfaces on head.
 - b. Suitable black oxide or painted handles completely covered with no evidence of chipping or flaking. Solid color (bright finish).
 - c. All forged or cast finishes shall have fins, spurs, flash etc., smoothly and completely removed.
 - d. Handle areas and finger and thumb loops shall be smoothly finished and shaped to afford comfortable hand and finger gripping surfaces.
 - e. Neat, clean, attractive, general overall appearance.
- II. Serviceability and durability.
 1. Design selected shall demonstrate good strength to weight ratio having smooth, clean flowing lines with no excess bulk or weight.
 2. Shears and scissors shall open and close smoothly, with blade surfaces and all center bolts and (bolt) pivots working smoothly and easily (without binding) from (fully) opened to (fully) closed position.

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4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

4.1.1 Inspection of materials and components. In accordance with 4.1 above, the supplier is responsible for insuring that materials and components used were manufactured, tested, and inspected in accordance with the requirements of referenced subsidiary specifications and standards to the extent specified herein, or, if none, in accordance with this specification.

4.2 Sampling procedures. Sampling procedures shall be in accordance with FED-STD-358.

4.3 Testing. Each sample unit shall be tested in accordance with 4.3.1 thru 4.3.8.

4.3.1 Hardness. Hardness tests shall be conducted in accordance with ASTM E 18. When grinding is necessary to prepare the test surface, the amount of material removed must not exceed 0.007 inches on the surface contacted by the indenter.

4.3.1.1 Blade hardness. The blades of each sample shear shall be tested to determine compliance with the hardness requirements specified in 3.10, 3.11.1.1, 3.11.1.2, 3.11.2.1, 3.11.2.2, 3.11.3 and 3.11.5. Suitable grinding or dressing shall be performed over the area or areas to be tested so that any case-hardened surface is removed. Readings shall be taken within 1/8 inch from the cutting edge.

4.3.1.2 Bearing surface of bolt. The bearing surfaces of the bolt of each sample shear shall be tested to determine compliance with the hardness requirements specified in (a) or (b) of 3.71.

4.3.2 Bolt tensile. Determinations shall be made to ascertain compliance with the tensile strength requirements for bolts conforming to the requirements specified in (c) of 3.7.1 and for bolts of type II, class 4, style A shears, as specified in 3.7.1.1.

4.3.3 Carbon content. The supplier shall furnish certification that the chemical composition of each lot or batch of steel used in the end item meets the applicable carbon requirements as specified in 3.10.1, 3.10.2, 3.11.1.1, 3.11.1.2, 3.11.2.1, 3.11.2.2, 3.11.3, and 3.11.5.

4.3.4 Paper cutting test. Each sample shear, both before and after being tested as specified in 4.3.5, shall be made to cut a one sheet thickness of 25 percent minimum rag content, 16 pound minimum weight bond paper. At least 11 inches of the paper shall be cut cleanly, without having torn or ragged edges using the shears full length of cut.

4.3.5 Metal-cutting tests.

4.3.5.1 Material required. The cold rolled steel listed for tests in tables I through VI and specified in 4.3.5.2, 4.3.5.3, 4.3.5.5 and 4.3.7 shall be of (temper No. 2) cold-rolled carbon-steel strip (except free machining), having a hardness on the Rockwell B scale of from 75 to 85. Stainless steel listed for test in tables I through VI and specified in 4.3.5.2 and 4.3.5.3 shall be of A.I.S.I 316 chrome-nickel alloy (annealed).

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4.3.5.2 Load-cutting tests. Each sample shear shall make 10 cuts in both cold-rolled and stainless-steel strip as specified in 4.3.5.1. The test sheets shall be 3 inches wide by 12 inches long, having a minimum thickness as specified in the applicable tables of section 3. The test load shall be applied by a testing machine or other suitable device or method. The first cut shall be made parallel to the 3-inch side 1/2 inch from the end. Each succeeding cut shall be spaced 1/2 inch from the preceding cut until 10 cuts have been made. The entire length of the cutting edges shall be used in making each individual cut, and the test load required to make these cuts shall not exceed the values specified in the applicable tables of section 3.

4.3.5.3 Strip-cutting test. Following the load-cutting test, each shear shall be operated by hand to make at least five cuts across strips 1/2-inch wide of the same material as used in the above test; the cutting being done within 1 inch of the outer end of the blades. The shear may be supported on a bench, vise or fixture, and the strip supported or held for this test.

4.3.5.4 Narrow-width cutting test, for type II, class 4 shears. Following the strip-cutting test in 4.3.5.3, each type II, class 4 sample shear shall be required to make at least 5 full-length cuts. These 5 cuts shall be made parallel to one another, and from 3/64 to 5/64 inch apart on steel strapping 0.015 inch thick, and having a hardness on the Rockwell "B" scale of from 95 to 100. Sample shears shall cut the test strip cleanly, and spiral or roll up each sheared metal strip, diverting it from the handle area. Sample shears that fail to pass this test or leave torn or rolled-over uncut edges, shall be rejected.

4.3.5.5 Serration grip test for type II, class 4 shears. The purpose of this test is to determine whether the blade serrations are of sufficient depth and sharpness to effectively grip the work while cutting is in progress. At least one full length cut shall be made in cold rolled strip (see 4.3.5.1) 0.049 plus or minus 0.002 inch thick and approximately 3 inches wide. An examination of the edges of this cut shall be made to determine whether the sample shear's serration imprints are clearly visible along the entire length of both edges of the cut. The foregoing may be repeated as many times as is necessary for the inspector to make his decision to accept or reject the sample. If serration imprints are not sharp, clear and well defined, or if smeared or blank areas are evident, the lots represented by these sample shears shall be rejected.

4.3.5.6 Cutting test for jaw tips on type II, class 4 shears. The following test shall be conducted using the same sample shears as were previously used in 4.3.5.5. The purpose of this test is to determine whether or not the tip ends of the cutting jaws cut satisfactorily. The test shall be made on a sheet of cold rolled steel strip, approximately 3.0 inches wide by 4.0 inches long and 0.049 plus or minus 0.002 inch thick, with a 90-degree bend made approximately 3/4 inch back from the edge. The tip end of one jaw shall be butted against the 90-degree bend of the test sheet and two cuts of 3/4 inch length made. The jaws shall cut the metal cleanly without evidence of tearing or failure to cut up to 90-degree bend. Examination after test showing tearing or failure to cut any portion from the edge up to the 90-degree bend of the test material shall be cause for rejection.

4.3.6 Cheesecloth cutting test for type II, class 4, styles A and B shears. Samples of type II, class 4 shears shall be required to cut a single thickness of clean, bleached, unsized #40 or 60 mesh cheesecloth for the full length of cut. This test shall be performed with the operator using one hand only on the shears, and making at least three separate cuts. While these three cuts are being made, the cheesecloth shall be hanging or laying loose and shall not be stretched tight. If the cheesecloth is not cut cleanly for the full length of each of three cuts, the lots of shears represented by the samples shall be rejected. The cheesecloth cutting test shall be conducted after all other cutting tests are completed.

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4.3.7 Wear tests for type II, class 4, shears. Each sample shear shall be subjected to three full length cuts in 0.049 plus or minus 0.002 inch cold rolled steel strip (see 4.3.5.1). The maximum handle pressure reading from these cuts shall be recorded for each sample tested, and then 100 additional full length cuts shall be taken with each sample, but no readings recorded. After this, three more full length cuts shall be made with each sample and a second set of maximum handle pressure readings recorded. Second maximum readings shall not exceed the first maximum readings by more than 10 percent. After the above tests are completed, full length cuts shall be made to measure length of cut as follows: Make one full length cut in 0.021 inch cold rolled steel for the 8 inch size; 0.049 inch cold rolled steel for the 10 inch size, and 0.062 inch cold rolled steel for the 9 and 12 inch sizes.

4.3.8 Examination after tests. After the hardness and cutting tests have been made, each shear shall be examined for evidence of failure as defined in 3.6. The permanent set of the handles of type II, class 4 shears shall not exceed 5 percent (measurements to be taken at the extreme ends of the handles) when in closed position.

4.4 Inspection of preparation for delivery requirements. An inspection shall be made to determine that the preservation, packaging, packing, and marking comply with the requirements of PPP-P-40.

5. PREPARATION FOR DELIVERY

5.1 Preservation, packaging, packing and marking. Preservation, packaging, packing and marking shall be in accordance with PPP-P-40. Preservation, packaging and packing shall be level A, B, or C, as specified (see 6.1).

6. NOTES

6.1 Intended use. The hand shears (snips), type II, covered by this specification are intended for use by right-handed operators. Hand shears (snips) for use by left-handed operators may be fabricated in accordance with this specification with the exception of the position of the blades and curve of circular cut blades. For left-handed operators the lower blade should be on the right-hand side and the curve of circular blades should be to the right.

6.2 Ordering data. Purchasers should exercise any desired options offered herein, and procurement documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Type, class, style and design as applicable (1.2.1).
- (c) Nominal size (see applicable table).
- (d) Specify if other than straight cut is required (3.10.1 and 3.10.2).
- (e) Specify if other than right-hand operated shears are required (3.11).
- (f) Applicable levels of preservation, packaging and packing (5.1).

TABLE I. Type I, class 1, single-lever bench shears

Nominal size	Length overall		Length of cut (see 3.9)	Weight		Cutting capacity		Cutting test	
						Cold rolled steel	Stainless steel	Test load	Point of load application on handle from center of bolt + 1/2
	Mini-mum	Maxi-mum	Mini-mum	Mini-mum	Maxi-mum	Mini-mum	Mini-mum	Maxi-mum	Maxi-mum
<u>Inches</u> 39	<u>Inches</u> 37	<u>Inches</u> 42	<u>Inches</u> 8-3/4	<u>Pounds</u> 20	<u>Pounds</u> 26	<u>Inch</u> 0.050	<u>Inch</u> 0.037	<u>pounds</u> 267	<u>Inches</u> 24

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TABLE II. Type I, class 2, compound-lever bench shears

Nominal size	Length overall		Length of cut (see 3.9)	Weight		Cutting capacity		Cutting test	
	Mini- mum	Maxi- mum	Mini- mum	Mini- mum	Maxi- mum	Cold rolled steel	Stain- less steel	Test load	Point of load application on handle from center of bolt $\pm 1/2$
	Inches	Inches	Inches	Pounds	Pounds	Inch	Inch	pounds	Inches
34	30	38	3-3/8	16	26	0.109	0.078	193	21

TABLE III. Type II, class 1, styles A and B, straight-cut hand shears inlaid blades and solid steel blades

Nominal size	Length overall		Length of cut (see 3.9)	Weight		Cutting capacity		Cutting test	
	Mini- mum	Mini- mum	Mini- mum	Mini- mum	Mini- mum	Cold rolled steel	Stain- less steel	Point of load ap- plication on handle from center of bolt $\pm 1/2$	Test load Maxi- mum
	Inches	Inches	Inches	Ounces	Ounces	Inch	Inch	Inches	Pounds
7	6-1/2	7-1/2	1-5/8	5	9	0.021	0.015	3-1/2	50
8	7-1/2	8-1/2	1-3/4	7	11	.021	.015	4-1/2	46
12-1/2	12	13	2-3/4	20	32	.037	.028	8	120
16*	15-3/4	17	2-1/4	48	72	.062	.043	11	153

* Note: 16 inch nominal size in style A only.

TABLE IV. Type II, class 2, styles A and B, circular-cut hand shears, inlaid blades and solid steel blades

Nominal size	Length overall		Length of cut (see 3.9)	Weight		Cutting capacity		Cutting test	
	Mini- mum	Mini- mum	Mini- mum	Mini- mum	Mini- mum	Cold rolled steel	Stain- less steel	Point of load ap- plication on handle from center of bolt $\pm 1/2$	Test load Maxi- mum
	Inches	Inches	Inches	Ounces	Ounces	Inch	Inch	Inches	Pounds
12-1/2	12	13	2-3/4	20	32	0.037	0.028	8	120

TABLE V. Type II, class 3, combination hand shears

Nominal size	Length overall		Length of cut (see 3.9)	Weight		Cutting capacity		Cutting test	
	Mini- mum	Maxi- mum	Mini- mum	Mini- mum	Maxi- mum	Cold rolled steel	Stain- less steel	Test load	Point of load application on handle from center of bolt $\pm 1/2$
	Inches	Inches	Inches	Ounces	Ounces	Inch	Inch	Pounds	Inches
7	6-3/4	7-1/2	1-1/2	5	8	0.018	0.014	40	3-7/8
12-1/2	12	13	2-3/4	20	32	.031	.021	100	7-1/2

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TABLE VI. Type II, class 4, designs 1, 2, and 3,
compound-lever hand shears, alloy steel blades

Nominal size Inches	Length overall		Length of cut (see 3.9) Minimum Inches	weight		Cutting capacity		Point of load ap- plication on handle from center of blade pivot bolt Inches	Cutting test Test load Maxi- mum Pounds
	Mini- mum Inches	Maxi- mum Inches		Mini- mum Ounces	Maxi- mum Ounces	Cold rolled steel Mini- mum Inch	Stain- less steel Mini- mum Inch		
	Design 1								
8	7	8-3/4	7/8	8	14	0.021	0.015	4	27
9	9	9-1/2	3/4	9	14	.062	.043	6	120
10	9-1/4	10-1/2	1-3/16	10	18	.049	.028	6	85
12	11-3/4	12-1/2	2-3/8	12	22	.062	.043	8	133
Designs 2 and 3									
10	9-1/4	10-1/2	1-3/16	11	18	.049	.028	6	67



FIGURE 1. Type I, class 1, single-lever
bench shears (right-hand cut).

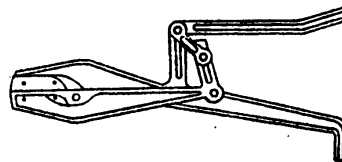


FIGURE 2. Type I, class 2, com-
pound-lever bench shears
(left-hand cut).

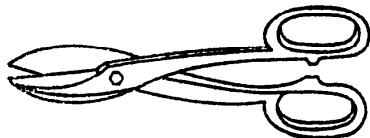


FIGURE 3. Type II, class 1, straight-
cut hand shears, inlaid
blades and solid steel blades.

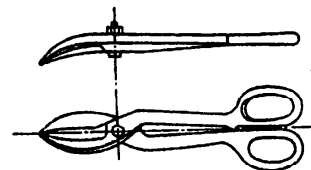


FIGURE 4. Type II, class 2, circular-
cut hand shears, inlaid
blades and solid steel
blades.

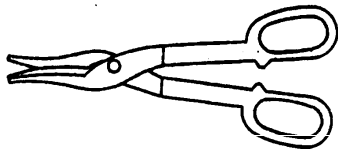


FIGURE 5. Type II, class 3, combination hand shears.

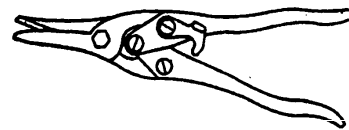


FIGURE 6. Type II, class 4, design 1, compound-lever hand shears, straight cutting.

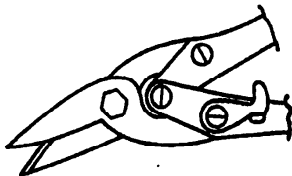


FIGURE 7. Type II, class 4, design 2, compound-lever hand shears, circular cutting to right.

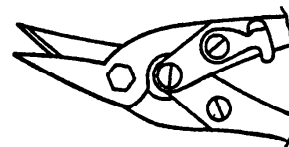


FIGURE 8. Type II, class 4, design 3, compound-lever hand shears, circular cutting to left.

MILITARY INTEREST:

DOD has waived coordination on revisions and amendments to this Federal Specification until further notice.

User activities:

- Army - GL, EL, AV, WC
- Navy - YD, MC
- Air Force - 84

Preparing activity:

GSA-FSS

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