

NN-H-93C
March 1, 1995
SUPERSEDING
NN-H-0093B(AGR-FS)
May 17, 1960

FEDERAL SPECIFICATION

HANDLES: HICKORY, STRIKING TOOL

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

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers hickory handles for use in axes, adzes, hammers, hatchets, mattocks, and picks.

1.1.1 Federal specification coverage. Federal specifications do not cover all varieties of the commodity 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. The handles shall be of the types and classes as specified (see 6.2):

Type I - Ax

- Class 1 - Belt
- Class 2 - Boy's
- Class 3 - Cruiser
- Class 4 - Double-bitted
- Class 5 - House
- Class 6 - Single-bitted
- Class 7 - Hunter's

Type II - Adz

- Class 1 - Adz

DISTRIBUTION STATEMENT A: APPROVED FOR PUBLIC RELEASE
DISTRIBUTION IS UNLIMITED

FSC 5120

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Type III - Hammer**Class 1**

| | | |
|--------|-----|------------------|
| Length | 14" | Blacksmith style |
| | 16" | Blacksmith style |
| | 16" | Heavy |

Class 2 - Claw

| | | |
|--------|-----|-------|
| Length | 12" | |
| | 13" | |
| | 14" | |
| | 14" | Heavy |

Class 3 - Hand

| | | |
|--------|-----|-----------------|
| Length | 10" | Machinist style |
| | 12" | Machinist style |
| | 14" | Machinist style |
| | 16" | Machinist style |
| | 18" | Machinist style |

Class 4 - Sledge

| | | |
|--------|-----|-------|
| Length | 32" | |
| | 36" | |
| | 36" | Heavy |

Type IV - Hatchet**Class 1 - Hatchet**

| | |
|--------|-----|
| Length | 14" |
| | 16" |

Type V - Pick**Class 1 - Pick or mattock with no. 6 eye****Class 2 - Mattock with no. 7 eye****Class 3 - Pick with no. 10 eye**

1.2.1 Special types. Types, classes, and length other than those listed herein may be purchased under this specification. They shall be of the size and form for the purpose specified in the purchase instrument and shall otherwise conform to this specification (see 6.2).

1.3 Grades. The handles shall be of the following grades as specified (see table I).

TABLE 1. Hickory handles

| Grade Symbol | Number of annual rings per inch of radius | Weight in pounds per cubic foot 1/ | Maximum admissible blemishes and defects (see 6.3) |
|--------------|---|------------------------------------|---|
| AA | Not over 17 | At least 55 | Two small streaks or equivalent in shorter streaks |
| A | Not over 22 | At least 48 | Four medium streaks or equivalent in shorter streaks Light stain ANYWHERE IN HANDLE: Large streaks including those caused by birdpecks Slight dip in grain Light stain |
| B | Not over 27 | At least 42 | Heavy stain Slight failure EYE END OR FIRST THIRD OF GRIP END: A total of not over two additional birdpecks, neither larger than 1/4 inch average diameter EYE END: One split not over 1/2 inch deep |

1/ Based on a moisture content not exceeding 12 percent.

2. APPLICABLE DOCUMENTS

2.1 Government documents. 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 Specifications:

- GGG-A-151 - Adz
- GGG-A-926 - Ax, (Single Bit, Double Bit, Pick Head and Mattock Head)
- GGG-H-86 - Hammer, Hand (Forged Steel Head)

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| | |
|-----------|--|
| GGG-H-131 | - Hatchet, (Claw, Half, Lathing, Broad and Barrel) |
| GGG-H-506 | - Hoe, Mattock, and Pick |
| PPP-B-575 | - Boxes, Paper-Overlaid Veneer, (Straparound Type) |
| PPP-B-585 | - Boxes, Wood, Wirebound |
| PPP-B-591 | - Boxes, Fiberboard, Wood-Cleated |
| PPP-B-601 | - Boxes, Wood, Cleated-Plywood |
| PPP-B-621 | - Boxes, Wood, Nailed and Lock-Corner |
| PPP-B-645 | - Boxes, Folding, Fiberboard, Heavy Duty |
| PPP-D-723 | - Drums, Fiber |

(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, and 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 Descriptions from established distribution points in their agencies.)

Military Standards:

| | |
|-------------|---|
| MIL-STD-105 | - Sampling Procedures and Tables for Inspection by Attributes |
| MIL-STD-129 | - Marking for Shipment and Storage |

(Copies of military specifications and standards required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Non-Government 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):

ASTM D 3953 - Flat Steel Strapping/Connectors (for Closing/Reinforcing/Bundling Articles)

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103-1187.)

3. REQUIREMENTS

3.1 Illustrations. Illustrations herein are descriptive and not restrictive and are not intended to preclude the purchase of handles otherwise conforming to this specification.

3.2 Material. The handles shall be hickory which includes wood cut from the four true hickories of commercial importance; shagbark hickory (*Carya ovata*), shellbark hickory (*Carya laciniosa*), pignut hickory (*Carya glabra*), and mockernut hickory (*Carya tomentosa*).

3.3 Natural color. There are no requirements as to the natural color of the wood in the handles; i.e., the handles of any grade may be heartwood (red hickory), sapwood (white hickory), or may contain both heartwood and sapwood.

3.4 Moisture content. The moisture content of the handles shall not exceed 12 percent.

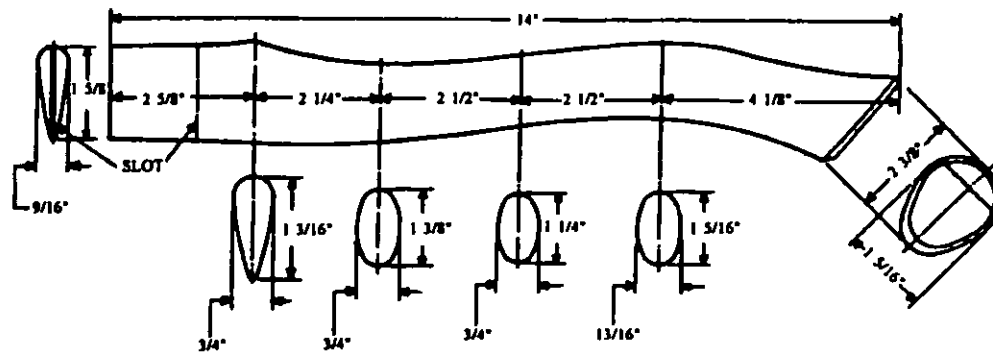
3.5 Quality. The handles shall conform to the requirements of table I for the grades specified.

3.6 Dimensions. The handles shall conform to the following drawings.

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TYPE I, CLASS 1

BELT AX - 14"



This handle is suitable for use in the following tool:

Specification No.

GGG-A-926

Tool type

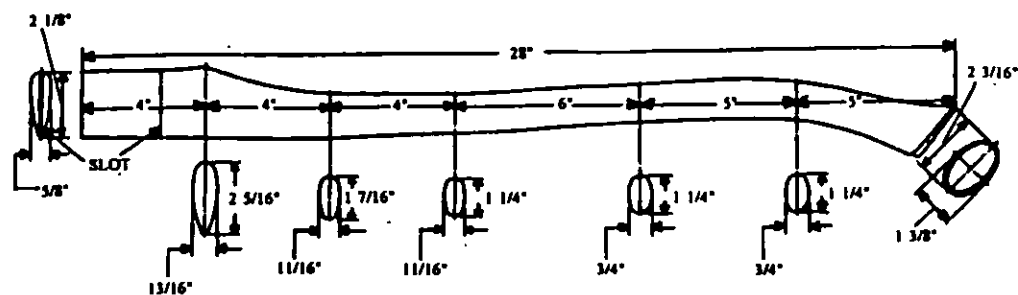
I

Class

2 - Design E

TYPE I, CLASS 2

BOY'S AX - 28"



This handle is suitable for use in the following tool:

Specification No.

GGG-A-926

Tool type

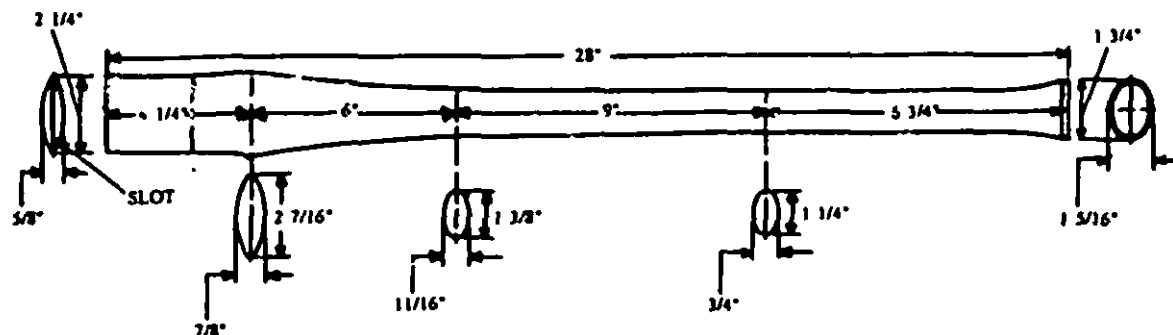
I

Class

1 - Design 3

TYPE I, CLASS 3

CRUISER AX - 28'



This handle is suitable for use in the following tool:

Specification No.

GGG-A-926

Tool type

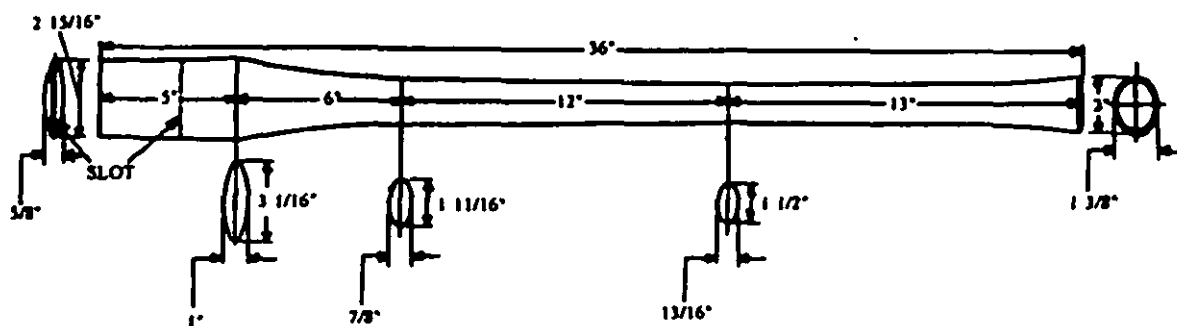
I

Class

2 - Design B

TYPE I, CLASS 4

DOUBLE-BITTED AX HANDLE - 36"



This handle is suitable for use in the following tools

Specification No.

GGG-A-926

GGG-A-926

GGG-A-926

Tool type

I

I

III

Class

2 - Design B

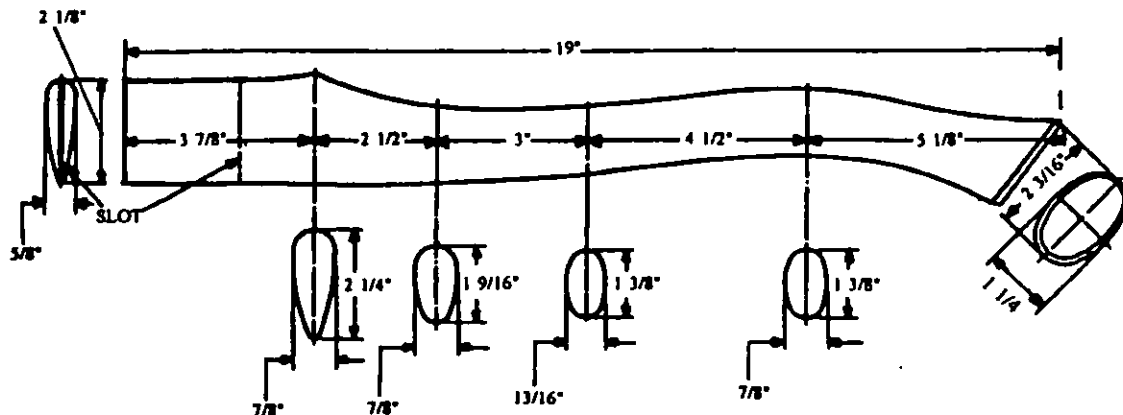
2 - Design A

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TYPE I, CLASS 5

HOUSE AX - 19"



This handle is suitable for use in the following tool:

Specification No.

GGG-A-926

Tool type

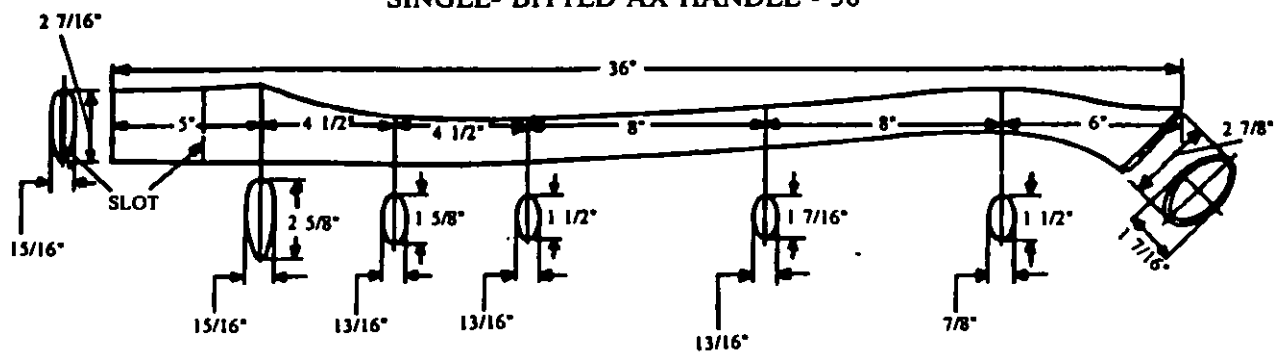
I

Class

1 - Design C

TYPE I, CLASS 6

SINGLE-BITTED AX HANDLE - 36"



This handle is suitable for use in the following tools:

Specification No.

GGG-A-926

Tool type

I

Class

1 - Design A

GGG-A-926

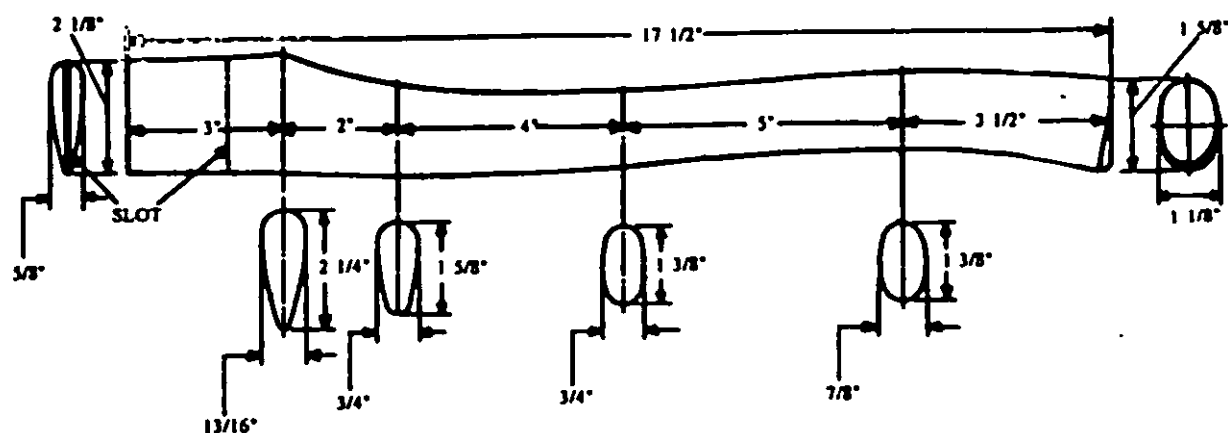
II

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TYPE I, CLASS 7

HUNTER'S AX - 17"



This handle is suitable for use in the following tool:

Specification No.

GGG-A-926

Tool type

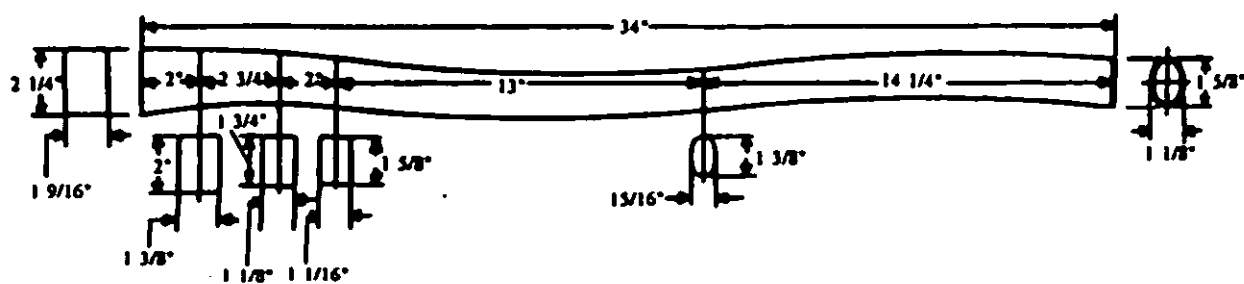
I

Class

1 - Design D

TYPE II

ADZ HANDLE - 34"



This handle is suitable for use in the following tool:

Specification No.

GGG-A-151

Tool type

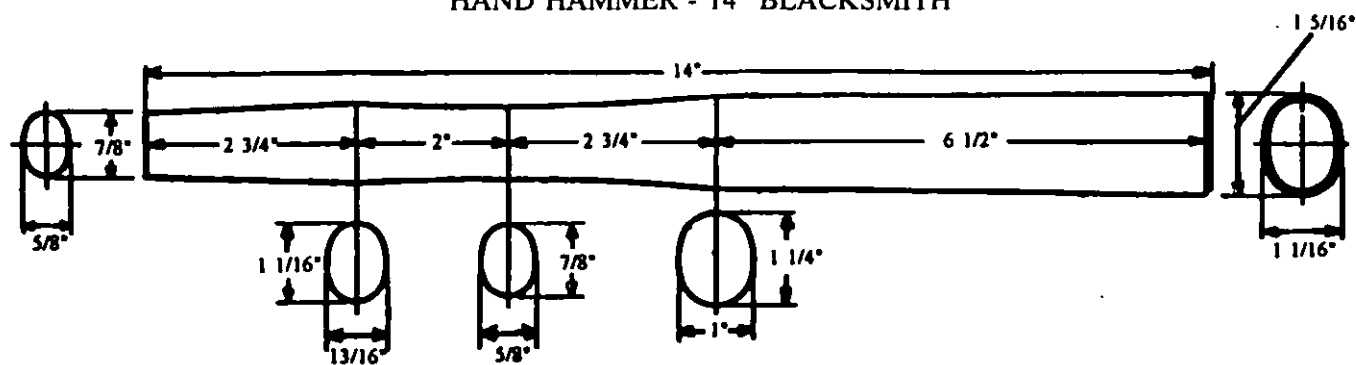
All adzes

Class

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TYPE III, CLASS 1 - 14"

HAND HAMMER - 14" BLACKSMITH



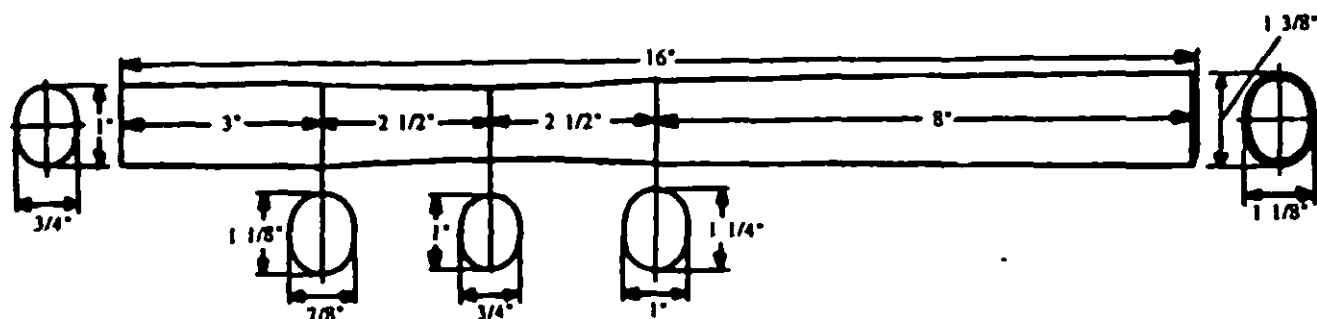
This handle is suitable for use in the following tools

| <u>Specification No.</u> | <u>Tool type</u> | <u>Class</u> |
|--------------------------|------------------|--------------|
| GGG-H-86 | P | -- |
| GGG-H-86 | V | I - 28 oz. |
| GGG-H-86 | V | I - 32 oz. |

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TYPE III, CLASS 1 - 16"

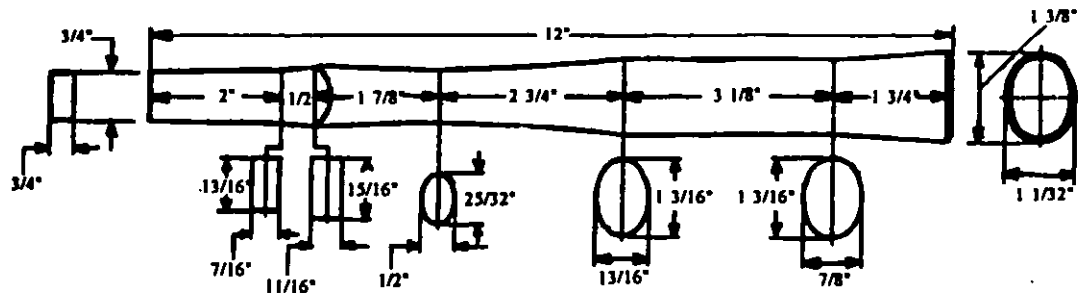
HAND HAMMER 16" BLACKSMITH



This handle is suitable for use in the following tools:

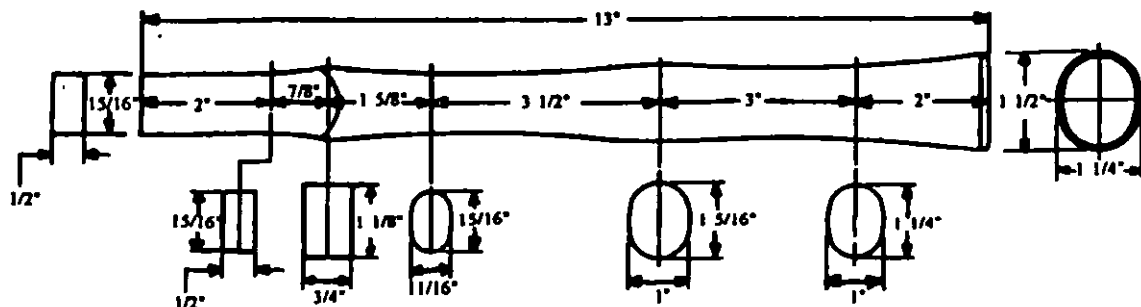
| <u>Specification No.</u> | <u>Tool type</u> | <u>Class</u> |
|--------------------------|------------------|---------------------|
| GGG-H-36 | A | All weights |
| GGG-H-36 | E | 3 and 4 lb. |
| GGG-H-36 | G | 3 lb. |
| GGG-H-36 | J | I - 3 and 4 lb. |
| GGG-H-36 | J | II - All weights |
| GGG-H-36 | K | I - All weights |
| GGG-H-36 | K | II - All weights |
| GGG-H-36 | K | III All weights |
| GGG-H-36 | K | IV - 2, 3, 4, 6 lb. |
| GGG-H-36 | N | 3 and 4 lb. |
| GGG-H-36 | S | II - 4 lb. |
| GGG-H-36 | T | I - 4 lb. |
| GGG-H-36 | T | II - 4 lb. |

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TYPE III, CLASS 2 - 12"**CLAW HAMMER HANDLE - 12"**

This handle is suitable for use in the following tools:

| <u>Specification No.</u> | <u>Tool type</u> | <u>Class</u> |
|--------------------------|------------------|--------------|
| GGG-H-86 | D | I - 7 oz. |
| GGG-H-86 | F | 14 oz. |

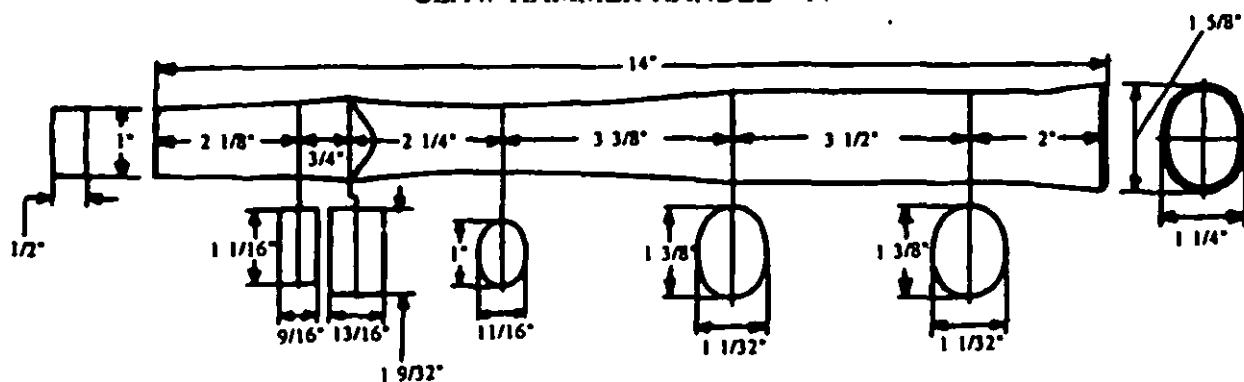
TYPE III, CLASS 2 - 13"**CLAW HAMMER HANDLE - 13"**

This handle is suitable for use in the following tools:

| <u>Specification No.</u> | <u>Tool type</u> | <u>Class</u> |
|--------------------------|------------------|-------------------|
| GGG-H-86 | D | I - 13 oz. |
| GGG-H-86 | D | II - 13 oz. |
| GGG-H-28 | H | IV - 7 and 10 oz. |

TYPE III, CLASS 2 - 14"

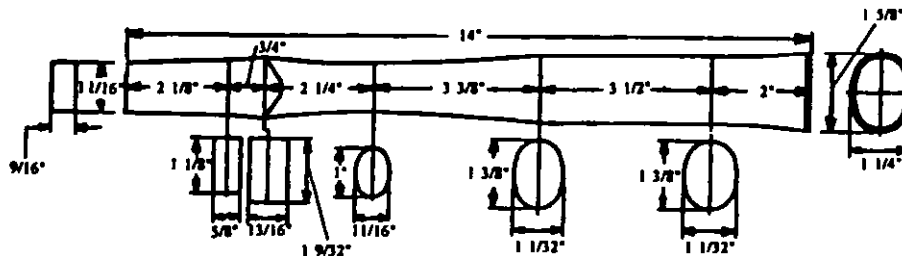
CLAW HAMMER HANDLE - 14"



This handle is suitable for use in the following tools:

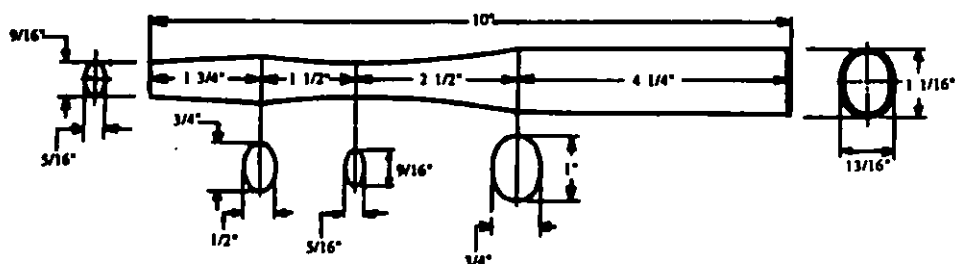
| <u>Specification No.</u> | <u>Tool type</u> | <u>Class</u> |
|--------------------------|------------------|---------------|
| GGG-H-86 | C | 24 and 32 oz. |
| GGG-H-86 | D | I - 16 oz. |
| GGG-H-86 | D | II - 16 oz. |
| GGG-H-86 | D | III - 16 oz. |
| GGG-H-86 | D | IV - 16 oz. |
| GGG-H-86 | H | IV - 12 oz. |
| GGG-H-86 | I | 16 oz. |

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TYPE III, CLASS 2 - 14" HEAVY**CLAW HAMMER HANDLE - 14" HEAVY**

This handle is suitable for use in the following tool:

| <u>Specification No.</u> | <u>Tool type</u> | <u>Class</u> |
|--------------------------|------------------|--------------|
| GGG-H-86 | D | I - 20 oz. |
| GGG-H-86 | D | II - 20 oz. |
| GGG-H-86 | D | III - 20 oz. |
| GGG-H-86 | D | IV - 20 oz. |
| GGG-H-86 | I | 24 oz. |

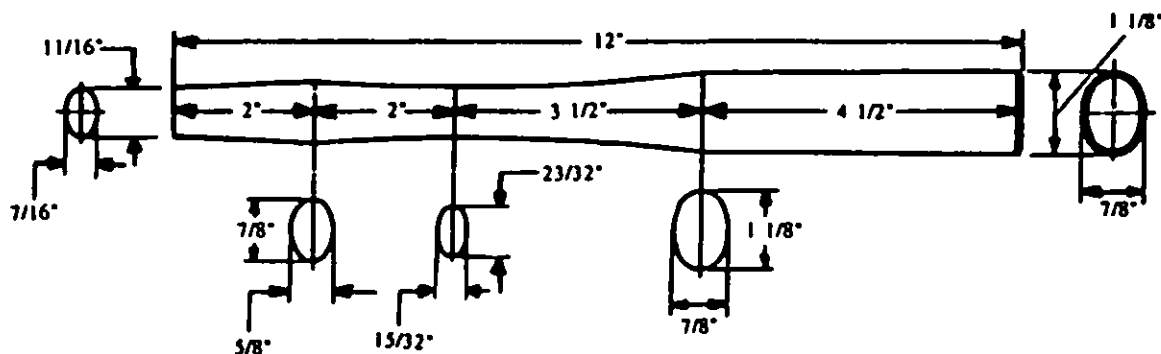
TYPE III, CLASS 3 - 10"**HAND HAMMER - 10" MACHINIST'S**

This handle is suitable for use in the following tool:

| <u>Specification No.</u> | <u>Tool type</u> | <u>Class</u> |
|--------------------------|------------------|-----------------|
| GGG-H-86 | E | 1/2 lb. |
| GGG-H-86 | L | I - 2 and 4 oz. |
| GGG-H-86 | L | IV - 4 oz. |
| GGG-H-86 | V | II - 4 oz. |

TYPE III, CLASS 3 - 12"

HAND HAMMER - 12" MACHINIST'S



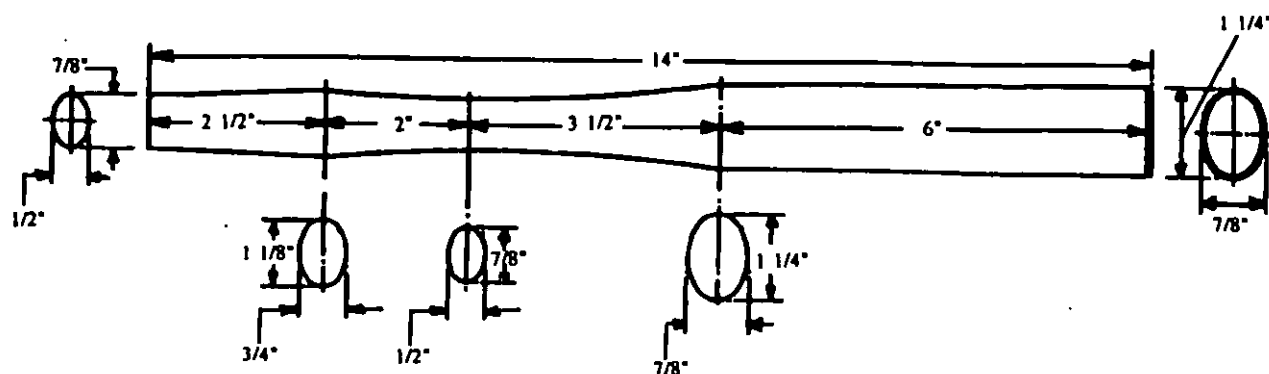
This handle is suitable for use in the following tool:

| <u>Specification No.</u> | <u>Tool type</u> | <u>Class</u> |
|--------------------------|------------------|----------------------------|
| GGG-H-86 | E | 1 lb. |
| GGG-H-86 | K | IV - 1/4, 1/2, and 3/4 lb. |
| GGG-H-86 | L | I - 6 and 8 oz. |
| GGG-H-86 | L | IV - 7 and 9 oz. |
| GGG-H-86 | U | II |
| GGG-H-86 | V | II - 8 oz. |
| GGG-H-86 | W | -- |
| GGG-H-86 | Z | -- |

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TYPE III, CLASS 3 - 14"

HAND HAMMER - 14" MACHINIST'S

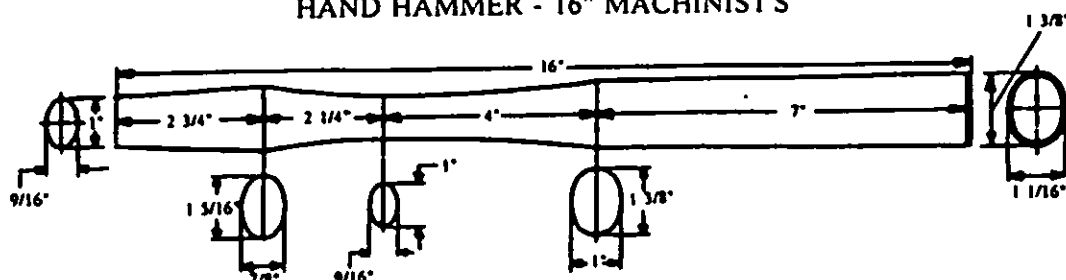


This handle is suitable for use in the following tool:

| <u>Specification No.</u> | <u>Tool type</u> | <u>Class</u> |
|--------------------------|------------------|-------------------------|
| GGG-H-86 | E | 1-1/2 and 2 lb. |
| GGG-H-86 | G | 2-1/2 lb. |
| GGG-H-86 | K | 1 lb. |
| GGG-H-86 | L | I - 12 oz. and 1 lb. |
| GGG-H-86 | L | IV - 12, 15, and 18 oz. |
| GGG-H-86 | V | II - 12 and 16 oz. |
| GGG-H-86 | V | III - 12 and 16 oz. |

TYPE III, CLASS 3 - 16"

HAND HAMMER - 16" MACHINIST'S

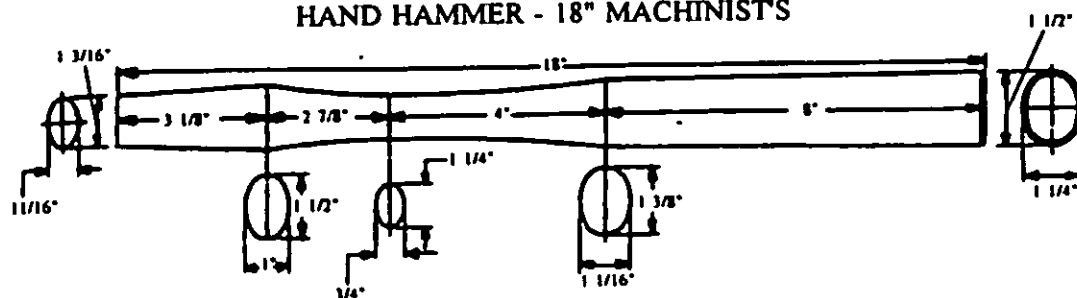


This handle is suitable for use in the following tool:

| Specification No. | Tool type | Class |
|-------------------|-----------|------------------------------------|
| GGG-H-86 | B | 2 and 3 lb. |
| GGG-H-86 | H | I - 2-1/4 lb. |
| GGG-H-86 | H | II - 2-1/4 lb. |
| GGG-H-86 | H | III - 2-1/4 lb. |
| GGG-H-86 | L | I - 1-1/4, 1-1/2, 2, and 2-1/2 lb. |
| GGG-H-86 | L | II - 1-1/2 and 2 lb. |
| GGG-H-86 | L | III - 1-1/2 and 2 lb. |
| GGG-H-86 | M | 3 and 4 lb. |
| GGG-H-86 | V | II - 20 oz. |

TYPE III, CLASS 3 - 18"

HAND HAMMER - 18" MACHINIST'S

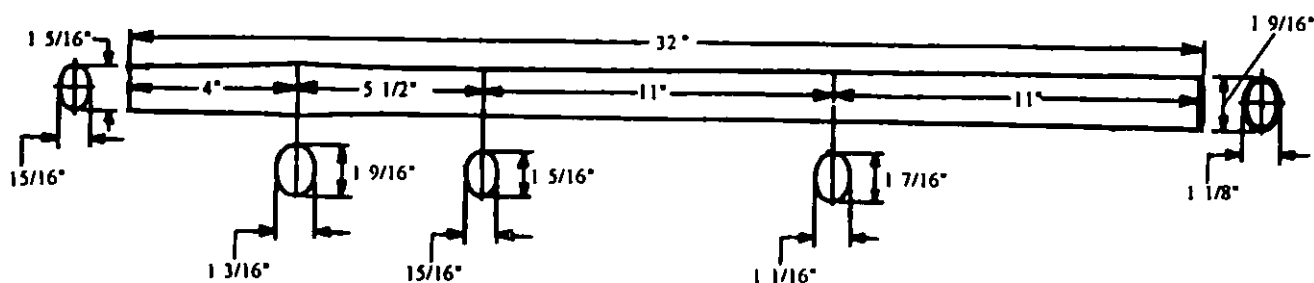


This handle is suitable for use in heavy ball-pein hammers, blacksmith's, and engineer's hammers with eye shapes differing from those given in GGG-H-86.

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TYPE III, CLASS 4 - 32"

SLEDGE HAMMER HANDLE - 32"

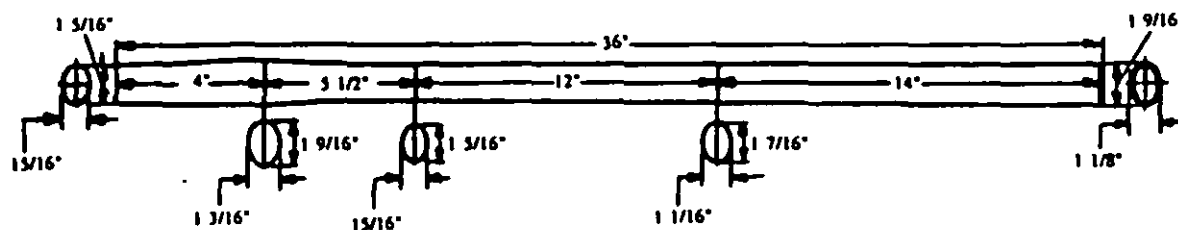


This handle is suitable for use in the following tool:

| <u>Specification No.</u> | <u>Tool type</u> | <u>Class</u> |
|--------------------------|------------------|--------------------------|
| GGG-H-86 | E | 6, 8, 10, and 12 lb. |
| GGG-H-86 | N | 6 lb. |
| GGG-H-86 | Q | - |
| GGG-H-86 | S | I - 8 lb. |
| GGG-H-86 | S | II - 6 and 8 lb. |
| GGG-H-86 | T | I - 6, 8, and 10 lb. |
| GGG-H-86 | T | II - 6, 8, and 10 lb. |
| GGG-H-86 | MA | 6, 8, and 10 lb. |
| GGG-H-86 | MB | 5 lb. |
| GGG-H-86 | MC | 6 and 8 lb. |
| GGG-H-86 | SA | I - 6, 8, and 10 lb. |
| GGG-H-86 | SA | II - 4, 6, 8, and 10 lb. |
| GGG-H-86 | SA | III - 8 lb. |
| GGG-H-86 | SB | 6 and 8 lb. |

TYPE III, CLASS 4 - 36"

SLEDGE HAMMER HANDLE - 36"

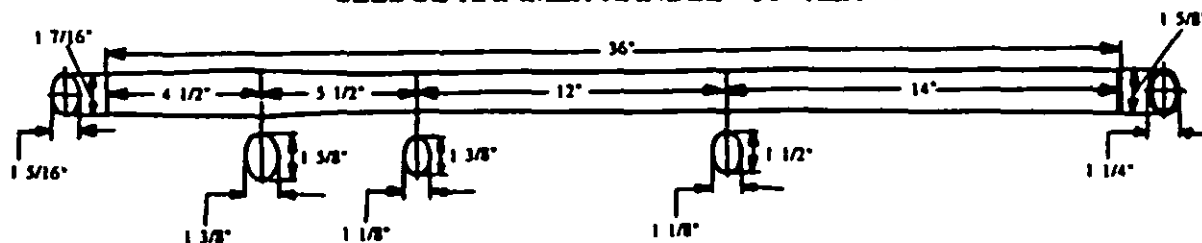


This handle is suitable for use in the following tool:

| <u>Specification No.</u> | <u>Tool type</u> | <u>Class</u> |
|--------------------------|------------------|-------------------|
| GGG-H-86 | S | I - 12 and 16 lb. |
| GGG-H-86 | S | II- 12 and 16 lb. |
| GGG-H-86 | T | I - 12 lb. |
| GGG-H-86 | T | II- 12 lb. |
| GGG-H-86 | SA | I - 12 and 16 lb. |
| GGG-H-86 | SA | II- 12 and 16 lb. |
| GGG-H-86 | SA | III 12 and 14 lb. |
| GGG-H-86 | SB | 12 and 16 lb. |

TYPE III, CLASS 4 - 36" HEAVY

SLEDGE HAMMER HANDLE - 36" HEAVY



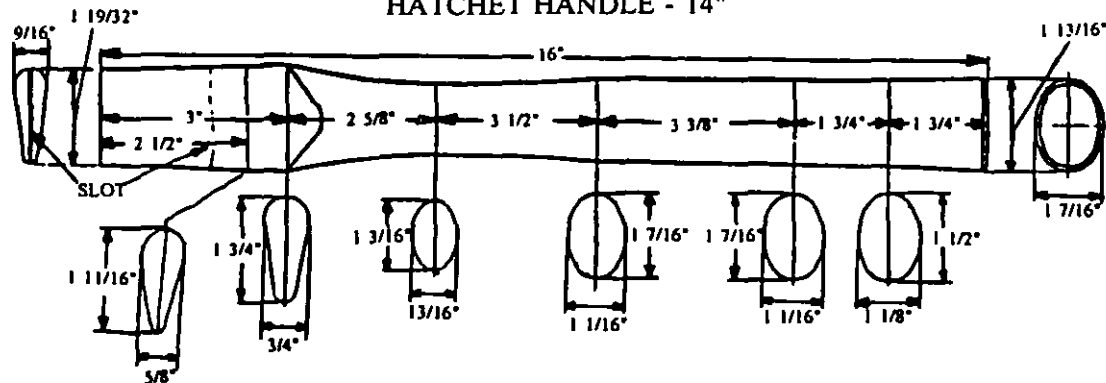
This handle is suitable for use in the following tool:

| <u>Specification No.</u> | <u>Tool type</u> | <u>Class</u> |
|--------------------------|------------------|--------------|
| GGG-H-86 | T | I - 16 lb. |
| GGG-H-86 | SA | II - 20 lb. |

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TYPE IV, CLASS 1 - 14"

HATCHET HANDLE - 14"

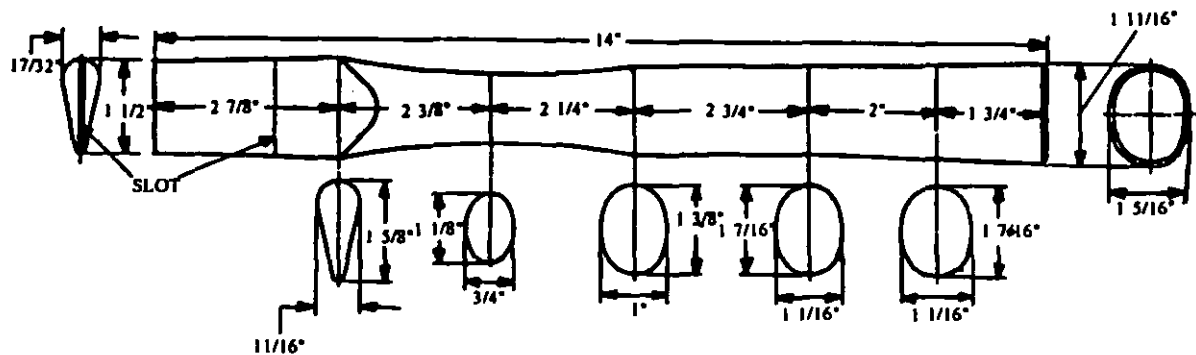


This handle is suitable for use in the following tool:

| Specification No. | Tool type | Class |
|-------------------|-----------|-------|
| GGG-H-131 | B | -- |
| GGG-H-131 | C | -- |
| GGG-H-131 | D | -- |
| GGG-H-131 | G | -- |

TYPE IV, CLASS 1 - 16"

HATCHET HANDLE - 16"



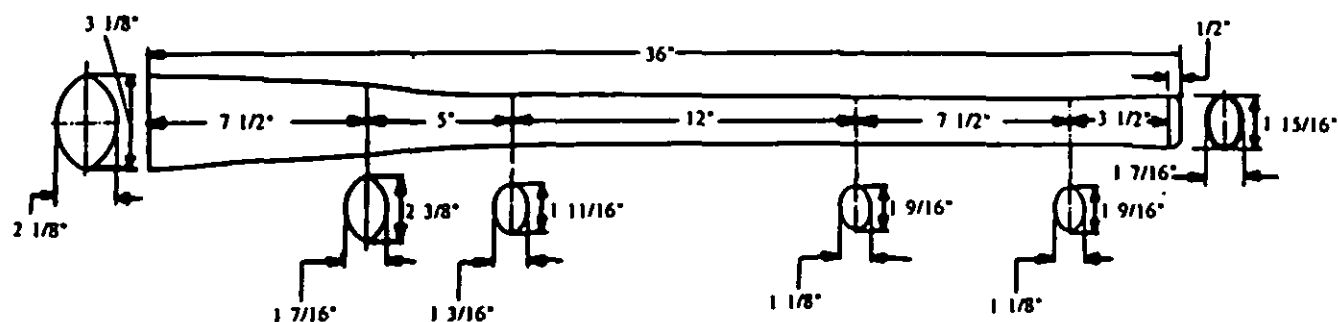
This handle is suitable for use in the following tool:

| Specification No. | Tool type | Class |
|-------------------|-----------|-------|
| GGG-H-131 | F | -- |

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TYPE V, CLASS 1 - 36"

PICK OR MATTOCK, NO. 6 EYE SIZE - 36"



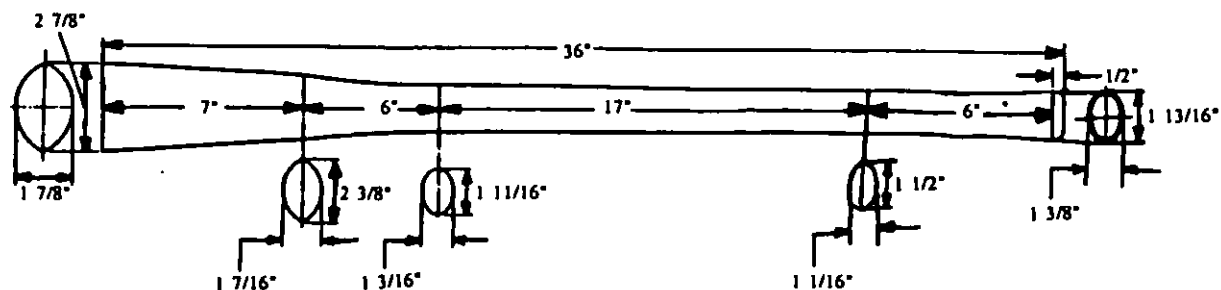
This handle is suitable for use in the following tool:

| <u>Specification No.</u> | <u>Tool type</u> | <u>Class</u> |
|--------------------------|------------------|--------------|
| GGG-H-506 | II | B |
| GGG-H-506 | II | C |
| GGG-H-506 | II | D - 5 lb. |
| GGG-H-506 | II | F |
| GGG-H-506 | III | A |
| GGG-H-506 | III | B |
| GGG-H-506 | III | C |
| GGG-H-506 | III | E |
| GGG-H-506 | III | G |
| GGG-H-506 | III | H |
| GGG-H-506 | III | I |
| GGG-H-506 | III | K |

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TYPE V, CLASS 2 - 36"

NO. 7 EYE SIZE - 36"

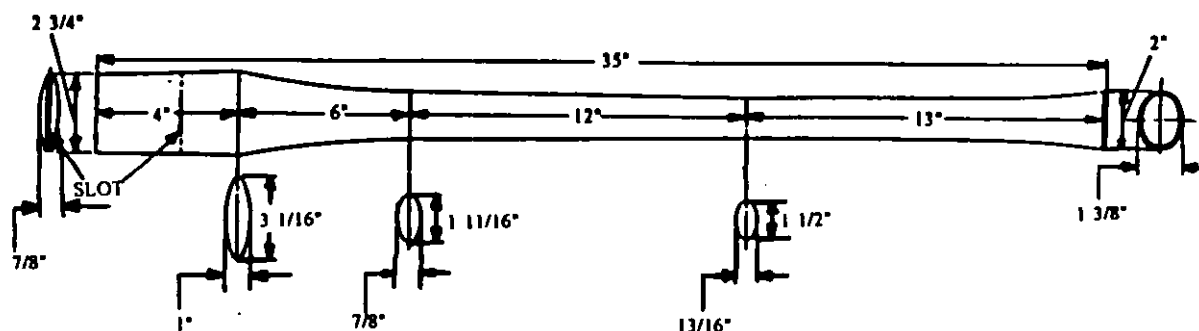


This handle is suitable for use in the following tool:

| <u>Specification No.</u> | <u>Tool type</u> | <u>Class</u> |
|--------------------------|------------------|--------------|
| GGG-H-506 | II | D - 3 lb. |
| GGG-H-506 | II | E |

TYPE V, CLASS 3 - 35"

NO. 10 EYE SIZE - 35"



This handle is suitable for use in the following tool:

| <u>Specification No.</u> | <u>Tool type</u> | <u>Class</u> |
|--------------------------|------------------|--------------|
| GGG-H-506 | III | D |
| GGG-H-506 | III | F |

3.6.1 Definition of "eye portion". The part of the handle referred to herein as the "eye portion" is intended to be the length from the end, reading left to right on the drawing, to the point of maximum transverse dimension on the shoulder, except for types II and V. The eye portion of type II handles shall be the first 6-3/4 inches, reading from left to right on the drawing; for type V handles the eye portion shall be the first 7-1/2 inches for classes 1 and 2; and the first 4 inches for class 3, reading from left to right on the drawing.

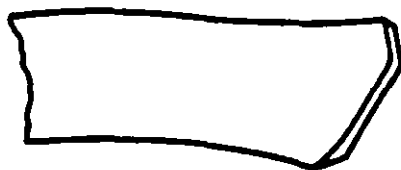
3.6.2 Longitudinal. Handles shall conform to the following drawings and shall have a tolerance of $\pm 1/2$ inch in overall length. The length tolerance for all eye portions shall be $\pm 1/8$ inch except for types II and V which shall be allowed a $1/2$ inch tolerance. Single-bitted and double-bitted ax handles may have eye portions 4-1/2 inches long instead of 5 inches (not to be considered a part of overall length tolerance), provided they conform to this specification in all other particulars.

3.6.3 Transverse. Reading from left to right on the applicable drawing, the first transverse measurement shall be taken 1/4 inch from the end. Other transverse measurements within the eye portion of the handle (except for handles of types II and V) shall be taken not more than $\pm 1/8$ inch from the point indicated on the drawing. All other transverse measurements (including those within the eye portion of types II and V handles) shall be made at a point not more than $\pm 1/2$ inch from the point indicated on the drawing.

3.6.3.1 Transverse dimension tolerances. The tolerances allowed in transverse dimensions vary in relation to the specified dimension. Where a specified dimension with the eye portion of the handle is 5/8 inch or larger, the tolerance shall be $+1/4$ inch or $-1/8$ inch. Dimensions smaller than 5/8 inch shall have a tolerance of $+1/8$ inch or $-1/16$ inch. These tolerances shall also apply within the eye portion of types II and V.

3.6.3.2 Other transverse dimension tolerances. All other transverse dimensions 5/8 or larger on the main body of the handle (beyond the eye portion) shall have a tolerance of $+1/4$, $-1/8$ inch; if smaller than 5/8 inch the tolerance shall be $+1/8$, $-1/16$ inch except for Type I, Class 4, which shall have a tolerance of $\pm 1/4$ inch.

3.6.4 Handle design. Handles for all axes will be accepted if the ends are scrolled or flattened instead of the typical fawn-foot style shown in figure 1. Ax and hatchet handles shall be slotted to receive the wedge. The slot shall be centered and extend approximately to the mid-point of the eye portion.



Modified Fawn Foot



Scroll

Figure 1

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3.6.5 Special types or sizes. Special types or sizes of handles shall conform to drawings furnished by the Government agency making the purchase, and shall be within the tolerances stated in 3.6.

3.7 Finish. The handles shall have a clear lacquer coating.

3.7.1 Stain. Handles driven into tool heads by the manufacturer of the heads may be color stained by the manufacturer provided the staining does not conceal the annual rings and the grain of the wood, does not discolor the hands of the user, and is not objectionable to the Government agency making the purchase.

3.8 Metric products. Products manufactured to metric dimensions will be considered on an equal basis with those manufactured using inch-pound units, provided they fall within the tolerances specified and all other requirements of this document are met. If a product is manufactured to metric dimensions and those dimensions exceed the tolerances specified in the inch-pound units, a request should be made to the specification preparing activity for a change to this document.

3.9 Workmanship. The handles shall be of good commercial workmanship.

3.10 Marking. Handles shall be legibly marked by steel stamping or branding with the grade and manufacturer's name, symbol, or trademark of such known character that the source of manufacture may be readily determined. The stamping or branding of the manufacturer's name, symbol, or trademark may be omitted on handles which are driven into heads of tools which are similarly stamped.

4. QUALITY ASSURANCE PROVISIONS

4.1 Sampling for lot acceptance

4.1.1 Inspection lot. All handles of the same type, class, style design, grade, and length offered for delivery at one time shall be a lot for purpose of inspection and test.

4.1.2 Sampling for examination. A random sample of handles shall be selected from each lot offered for acceptance. The size of sample and acceptance and rejection numbers shall be as indicated in Part A of table II.

TABLE II. Sampling for inspection and test

| Lot size | A | | | B | | | C | | |
|--------------|--------------------------|-------------------|------------------|--|-------------------|------------------|---------------------------|-------------------|------------------|
| | Sampling for examination | | | Sampling for electrical moisture meter tests | | | Sampling for weight tests | | |
| | Sample size | Acceptance number | Rejection number | Sample size | Acceptance number | Rejection number | Sample size | Acceptance number | Rejection number |
| 2 to 15 | Lot | 0 | 1 | 2 | 0 | 1 | - | - | - |
| 16 to 40 | 15 | 0 | 1 | 3 | 0 | 1 | - | - | - |
| 41 to 100 | 15 | 0 | 1 | 5 | 0 | 1 | - | - | - |
| 101 to 300 | 35 | 1 | 2 | 7 | 0 | 1 | 3 | 0 | 1 |
| 301 and over | 35 | 1 | 2 | 15 | 1 | 2 | 5 | 1 | 2 |

4.1.3 Sampling for moisture content test - electrical moisture meter method. A random sample of handles shall be selected from each lot offered for electrical moisture meter test. The size of sample and acceptance and rejection numbers shall be as indicated in Part B of table II.

4.1.4 Sampling for weight test. A random sample of handles shall be selected from each lot offered for acceptance and shall be tested in accordance with paragraph 4.4. The size of sample and acceptance and rejection numbers shall be as indicated in Part C of table II.

4.2 Visual and dimensional examination. Each of the sample handles selected in accordance with table II, shall be visually and dimensionally examined to verify compliance with this specification. Any handle in the sample containing one or more visual or dimensional defects, shall be rejected, and if the number of defective handles in any sample exceeds the acceptance number for that lot size, the lot represented shall be rejected.

4.3 Electrical moisture meter test. Each of the sample handles selected in accordance with table II, shall be tested for moisture content by the electrical moisture meter method. The moisture test shall be in accordance with the instructions furnished by the manufacturer of the electrical moisture meter. Electrical moisture meters shall not be used where the surface of the handle is wet or has been color-stained. Any handle showing more than 12 percent moisture content shall be considered defective, and if the number of defective handles in the sample exceeds the acceptance number for that lot size, the lot shall be rejected.

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4.4 Weight per cubic foot. A sample section with a volume of 1 cubic inch \pm 0.01 cubic inch shall be cut from the sample handle not less than 3 inches from either end. After conditioning the section to 12 percent moisture content, the section shall be weighted to an accuracy of 0.5 percent. That weight in pounds shall then be multiplied by 1728 pounds to give weight per cubic foot. As an alternative to cutting a sample section, the contractor may determine the average density by measuring the displacement (volume) and weight of the entire handle (to the same tolerances specified above) which has been conditioned to a 12 percent maximum moisture content. In the alternative method, the weight divided by the volume in cubic inches shall be multiplied by 1728 to determine the weight per cubic foot. Any sample which does not meet the requirements of table I shall be rejected. If the number of rejected handles exceeds the acceptance number for the lot size, the lot shall be rejected.

5. PREPARATION FOR DELIVERY

5.1 Preservation and packaging. There are no preservation or packaging requirements for these items.

5.2 Packing.

5.2.1 Level A. The handles shall be packed in containers conforming to overseas type of PPP-B-591, PPP-B-575, or PPP-B-601; class 2, style 2, 2-1/2 or 4 of PPP-B-621; style 1, 2, or 2A, class 3 use of PPP-B-585; type II of PPP-B-645; or type II, grade A of PPP-D-723. Each shipping container shall be closed and strapped in accordance with the appendix of the applicable container specification. Flat steel strapping or fiber strapping shall be in accordance with ASTM D 3953. The net weight of contents of wood type shipping containers, except cleated fiberboard, shall not exceed 150 pounds. The net weight of contents of fiber boxes, cleated fiberboard boxes, and fiber drums shall not exceed 125 pounds.

5.2.2 Level B. Unless otherwise specified, handles shall be packed in units of 12 containers and in a manner to insure carrier acceptance and safe delivery at destination. Each pack of 12 handles shall be strapped with at least 2 steel 1/2-inch-wide straps in accordance with ASTM D 3953.

5.2.3 Level C. Unless otherwise specified, handles shall be packed in units of 12 in accordance with the manufacturer's commercial practice.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful but is not mandatory.)

6.1 Intended use. This specification is intended to cover the purchase of replacement handles for the tools described in the Federal Specifications listed in paragraph 2.1. Because of variations in

manufacturing tolerances and eye sizes it is impracticable to specify handles to fit exactly all the tools listed. The handles described in this specification are suitable for use in the tools listed with a minimum of fitting and trimming.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- (a) Title, number, and date of this specification.
- (b) Type, class, length, and grade of handle required (see 1.2 and 1.3).
- (c) Level of packing and marking required (see 5.1).

6.3 Definitions. Blemishes (a) and defects (b).

- (b) **Birdpeck:** A small break in the fiber of the wood, usually accompanied by a large streak.
- (b) **Decay:** Deterioration due to action of wood-destroying fungi.
- (b) **Failure:** Area on handle that failed to turn due to lack of wood.
- (a) **Slight failure:** (See **Failure:** Limited to one-sixth of the contour of the handle if it does not affect the fit of the handle in the tool.
- (b) **Gross grain:** Deviation of the fiber from a line parallel to the axis of the handle in excess of 1 inch, in a length of 20 inches (1 in 20).
- (b) **Abrupt dip grain:** Local deviation of the grain from its general direction in excess of 1/8 inch, in a distance of not over 4 inches.
- (a) **Slight dip grain:** Local deviation of the grain from its general direction not in excess of 1/8 inch, in a distance of not over 4 inches.
- (b) **Hole:** May extend partially or entirely through the handle, and may be from any cause.
- (b) **Knot:** A portion of a branch of limb embedded in the wood. A sound, tight knot is solid across its face and as hard as the surrounding wood, and so fixed by growth that it will retain its place.
- (b) **Manufacture:** Imperfections produced in manufacture (include failures).
- (b) **Split:** Lengthwise separation of the wood extending through the handle.
- (b) **Heavy stains:** Pronounced discolorations, predominantly blue, occurring in specks, spots, streaks, or patches.
- (a) **Light stains:** Slight discoloration of any color, other than the natural color of the wood, which do not materially impair the appearance of the handle.
- (b) **Large streaks:** Discolored lines over 1/32 inch wide extending along the grain.
- (a) **Medium streaks:** Discolored lines not over 1/32 inch wide extending along the grain more than one-third of the length of the handle.
- (a) **Small streaks:** Thread like discolored lines extending along the grain not more than one-third of the length of the handle.

6.4 Color. Strength tests conducted by the Forests Products Laboratory of the Forest Service, United States Department of Agriculture at Madison, Wisconsin have shown that, weight for weight, sound straight-grained seasoned hickory has the same strength, toughness, and resistance to shock,

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regardless of whether it is heartwood (red hickory), sapwood (white hickory), or mixed hickory (heartwood and sapwood). A reliable indication of the strength of hickory is its density. Of two pieces of the same size and dryness, the hickory is generally denser than slow-growth hickory, so that a guide to strength is rate of growth as determined from the rings of annual growth per inch of radius. Few growth rings per inch (fast growth), as shown on the end of a handle, indicates a stronger and tougher handle than many rings (slow-growth), provided that it is straight-grained and free from weakening defects.

6.5 Treatment. Sometimes rough bolts, as well as unfinished squares and stored handles, are severely damaged by infestation of insects, general Lyctus powder-post beetles. Bolts cut during the season when insects are active are subject to attack by Lyctus beetles as soon as the moisture content is below 20 percent. This is also true of unfinished squares or manufactured by unfinished handle stock and similar items. Fortunately, Lyctus attack can be prevented by dipping the wood items in an insecticide. To be effective, the insecticide must be applied to raw wood since it will not penetrate paints, varnishes, lacquers, waxes, or other finishing materials. For those who are interested in insecticide dips, a consideration of Appendix A is suggested. The methods described therein may be specified in connection with the procurement of handles or they may be followed by the purchaser.

Lyctus infestations can be very costly. Adequate treatments are relatively inexpensive and should be included as part of the manufacturing process.

NO DOD INTEREST

PREPARING ACTIVITY:

GSA - FSS