TM 9-3465-201-10

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATOR'S MANUAL

FIXTURE, LATHE, METAL CUTTING FOR 2 INCH DIAMETER ROUND OR 2 INCH SQUARE STOCK, 360 DEGREE INDEX RING, 12 ½ HIGH, 5 WIDE, 3 7/8 VERTICAL TRAVEL (DUMORE COMPANY MODEL 8349) (3465-022-881 7)

Headquarters, Department of the Army, Washington, D. C.
25 March 1968

TM 9-3465-201-10
C 1

Change No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, *30 May 1973*

Operator's Manual
FIXTURE, LATHE, METAL CUTTING FOR 2 INCH DIAMETER ROUND OR 2 INCH SQUARE STOCK, 360 DEGREE INDEX RING, 12-1/2 HIGH, 5 WIDE, 3-7/8 VERTICAL TRAVEL
(DUMORE COMPANY MODEL 8349)
(3465-022-8817)

TM 9-3465-201-10, 25 March 1968 is changed as follows

Page 4 bottom of page. Add the following paragraphs

Recommendations for Maintenance Publications Improvements.

You can improve this manual by calling attention to errors and by recommending improvements using DA Form 2028 (Recommended Changes to Publications) or by a letter and mailing directly to Commander, US Army Weapons Command, ATTN: AMSWE-MAS-SP, Rock Island IL 61201. A reply will be furnished directly to you.

Components of the End Item.

Parts included with the end item and considered as components of the end item configuration are listed in the following table:

Table 1 Components of the End Item

Components	Part No.	(FSCM)	Qty
CASE, CARRYING:	R-479-0041	(18797)	1
CLAMP, INDEXING RING:	844-0017	(18797)	1
CLAMP, MOUNTING:	844-0016	(18797)	1
CLAMP, STOCK:	844-0018	(18797)	2
FIXTURE, LATHE, METAL CUTTING:	8349	(18797)	1
NUT, INDEXING RING CLAMP:	645-0273	(18797)	1
RING, INDEXING:	502-0136	(18797)	1
SCREW, CAP, SOCKET HEAD: 1/2-20UNF, full lg thd, 1 in. lg o/a	MS16998/95	(96906)	2
SCREW, CAP, SOCKET HEAD: 1/2-20UNF, full lg thd, 1-1/4 in. lg o/a	MS16998/96	(96906)	2
SCREW, CAP, SOCKET HEAD: 1/2-20UNF, 1.25 in. lg thd, 1-1/2 in. lg o/a	MS16998/97	(96906)	1
SCREW, CAP, SOCKET HEAD: 1/2-20UNF, 1.25 in. lg thd, 1-3/4 in. lg o/a	MS16998/98	(96906)	1
SCREW, CAP, SOCKET HEAD: 1/2-20UNF, 1.25 in. lg thd, 2 in. lg o/a	MS16998/99	(96906)	1
SCREW, CAP, SOCKET HEAD: 1/2-20UNF, 1.25 in. lg thd, 2-1/4 in. lg o/a	NPN		
SCREW, CAP, SOCKET HEAD: 1/2-20UNF, 1.25 in. lg thd, 2-1/2 in. lg o/a	MS16998/101	(96906)	1
SCREW, CAP, SOCKET HEAD: 1/2-20UNF, 1.25 in. lg thd, 3 in. lg o/a	MS16998/102	(96906)	2
SPACER, CLAMP, INDEXING RING:	1645-0273	(18797)	1
WASHER, CLAMP, INDEXING RING:	R766-0552	(18797)	1

Page 5. Appendix is superseded as follows:

APPENDIX
BASIC ISSUE ITEMS LIST
AND
ITEMS TROOP INSTALLED OR AUTHORIZED LIST

Section 1. INTRODUCTION

1. Scope.

This appendix lists basic issue items and items troop installed or authorized required by the crew/operator for operation of the FIXTURE, LATHE, METAL CUTTING.

2. General.

This Basic Issue Items List and Items Troop Installed or Authorized List is divided into the following sections:

a. Basic Issue Items List — Section II. A list in alphabetical sequence of items which are furnished with, and must be turned in with, the end item.

b. Items Troop Installed or Authorized List. Not applicable.

3. Explanation of Columns.

The following provides an explanation of columns found in the tabular listings

a. Federal Stock Number. Indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

b. Description. Indicates the Federal item name and a minimum description required to identify

the item. The last line indicates the reference number followed by the applicable Federal Supply Code for Manufacturer (FSCM) in parentheses. The FSCM is used as an element in item identification to designate manufacturer or distributor or Government agency, etc., and is identified in SB 708-42. Items that are included in kits and sets and listed below the name of the kit or set with quantity of each item in the kit or set indicated in front of the item name.

c. Unit of Measure (U/M). Indicates the standard or basic quantity by which the listed item is used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation, e.g., ea, in., pr, etc., and is the basis used to indicate quantities. When the unit of measure differs from the unit of issue, the lowest unit of issue that will satisfy the required units of measure will be requisitioned.

d. Quantity Furnished with Euipment (Basic Issue Items Only). Indicates the quantity of the item furnished with the equipment.

e. Quantity Authorized (Items Troop Installed or Authorized Only). Indicates the quantity authorized to be used with the equipment.

f. Illustration (Basic Issue Items Only). This column is divided as follows

(1) *Figure Number.* Indicates the figure number of the illustration in which the item is shown.

(2) *Item Number.* Indicates the item number used to identify each item called out in the illustration.

Section II. BASIC ISSUE ITEMS

(1) Federal Stock Number	(2) Description Usable on Code	(3) Unit of Meas.	(4) Furn With Equip	(5) Illustration	
				(a) Figure No.	(b) Item No.
5120-198-5392	KEY, SOCKET HEAD SCREW: hex type, L-hdl, 5/32 in. w across flats, 2-1/2 in. lg arm	EA	1	A-1	18
5120-240-5274	KEY, SOCKET HEAD SCREW: hex type, L-hdl 5/16 in. w across flats, 3-3/4 in. lg arm	EA	1	A-1	19
5120-198-5390	KEY, SOCKET HEAD SCREW: hex type, L-hdl, 3/8 in. w across flats, 4-1/4 in. lg arm	EA	1	A-1	20

By Order of the Secretary of the Army:

CREIGHTON W. ABRAMS
General, United States Army
Chief of *Staff*

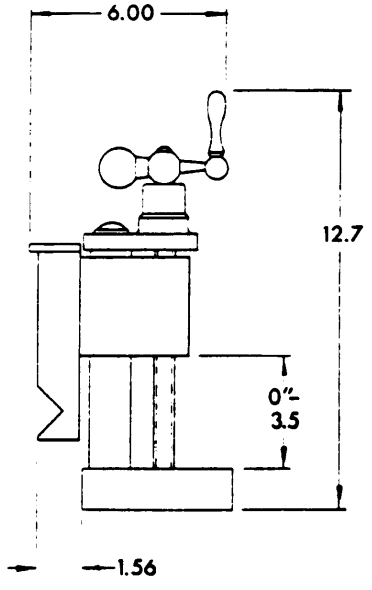
Official:
VERNE L. BOWERS
Major General, United States Army
The Adjutant General

Distribution:
Active Army:
DCSLOG (3)
CNGB (1)
TSG (1)
COE (5)
Dir of Trans (1)
OCC-E (1)
CONARC (2)
AMC (5)
ARADCOM (2)
ARADCOM Rgn (2)
Armies (3) except
7th USA (5)
8th USA (5)
Corps (2)
OS Maj Comd (2)
Log Comd (2)
WECOM (10)
AVSCOM (2)
TOAD (3)
USASA (1)
TECOM (1)
USACDCEC (10)
USASETAF (1)
USAARENBD (2)
USACMLCS (2)
USAMMCS (2)
USAQMS (2)
USMA (1)
JPG (1)
USATCFE (1)
MAAG (3)
Arsenals (2)
FLDMS (2) except
Ft Knox (10)
Units org under fol TOE:
(2 copies each)
3-500 (EA, EB, FA, FD)
7
10-500 (ED, HK, HO)
17
17-100
29-1
29-11
29-15
29-16
29-21
29-25
29-26
29-27
29-35
29-36
29-37
29-41
29-51
29-55
29-56
29-75
29-79
29-85
29-86
29-105
35-100
55-458
55-500 (ID, IE, KE)
57
57-100

NG: State AG (3)
USAR: None
For explanation of abbreviations used, see AR 310-50.

FIXTURE, LATHE, METAL CUTTING

FSN 3465-022-8817 **MODEL 8349**



DESCRIPTION

The Dumore Metal Cutting Lathe Fixture is a work-holding device which mounts on the compound of a conventional lathe. Machining is done with tooling held in the chuck or collet of the lathe spindle. The fixture provides vertical travel which is used with the longitudinal and traverse of the lathe. Power feed and a wide range of spindle speeds are already built into the lathe.

Capacities of the fixture are 2" diameter in round stock and up to 2" square in flat stock. The length of stock is unlimited.

LUBRICATION

The lead screw and guide posts are lubricated through grease fittings on the main body housing. When the fixture is not in use, protect all unpainted parts with a light film of oil.

INSTALLATION

The Dumore Metal Cutting Lathe Fixture is a precision tool. It will not be more accurate, however, than the lathe on which it is being used. Before mounting the fixture, check your lathe compound. Remove any burrs or surface irregularities with a file and check the top of the compound for trueness in both direction of travel. Compounds of most lathes are true within .001" in either direction, and this is acceptable for use with the fixture. Mount the fixture on your lathe by the following 3-step procedure.

1. Slide the fixture onto the compound with the T-slot mounting clamp in the T-slot of the compound and lightly tighten the mounting screws.

2. Bring the fixture plate into full contact with the lathe faceplate or face of the lathe spindle as shown in Figure 1 to align the fixture laterally. This provides adequate alignment for most machining operations. Where extreme accuracy is required, align the fixture laterally with a dial indicator.

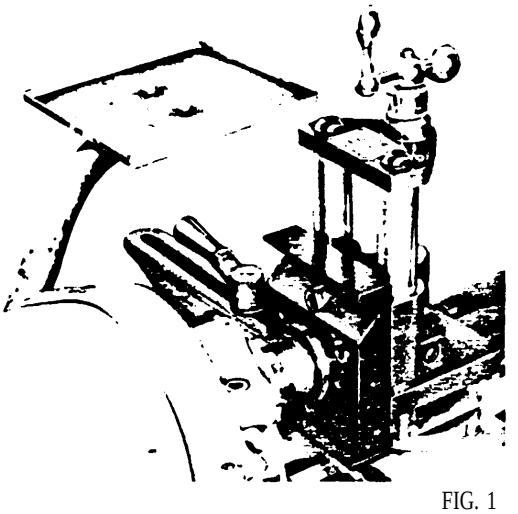


FIG. 1

3. Make certain that the fixture date is horizontally aligned with the cross travel of the lathe. Horizontal alignment, adequate for most operations, can be achieved by loosening the two fixture plate screws and positioning the vertical edge of the fixture plate parallel with the side of the main housing. On operations calling for tolerances closer than .001", align the flange of the fixture plate with a dial indicator.

The fixture is now aligned and ready to perform any of the machining operations outlined and illustrated in this manual. The fixture can be rotated about a vertical axis to any angle by means of the lathe compound without disturbing vertical alignment.

OPERATION

The same safety precautions should be observed when machining with this fixture as with any tool. Always wear safety glasses for eye protection. Loose clothing and neckties should never be worn when machining.

When round stock is to be machined, assemble the fixture plate to the main body housing keeping the V-groove down. Secure the workpiece with the stock clamps, using jack screws to level the stock clamps. Select the length required from the assortment of screws furnished.

When machining large diameter stock, assemble the jack screws in the stock clamps with the screw heads against the fixture plate as shown in Figure 2.

When machining flat stock, assemble the fixture plate to the main body housing keeping the V-groove up. Set the workpiece on the fixture plate flange and clamp the workpiece in the same manner as for round stock.

NOTE: Whenever the fixture plate is repositioned, it must be realigned as described in Step 3 under -- "Installation" on the front cover of this manual.

The lead screw will accurately position the workpiece by moving the main body housing along the guide posts. The lead screw has 10 threads per inch, and the lead screw graduated collar is calibrated to .001". For direct reading, turn the lead screw graduated collar to zero by loosening the collar set screw.

MILLING

Milling operations are performed with the workplace clamped to the fixture, and the milling cutter held in the lathe chuck or collet -- see Figure 2. The workpiece may be hand fed in any direction, lathe power feeds may be used for longitudinal or traverse travel.

BORING

The rigidity of the fixture assures accurate boring. The boring head is mounted in the lathe spindle. See Figure 3.

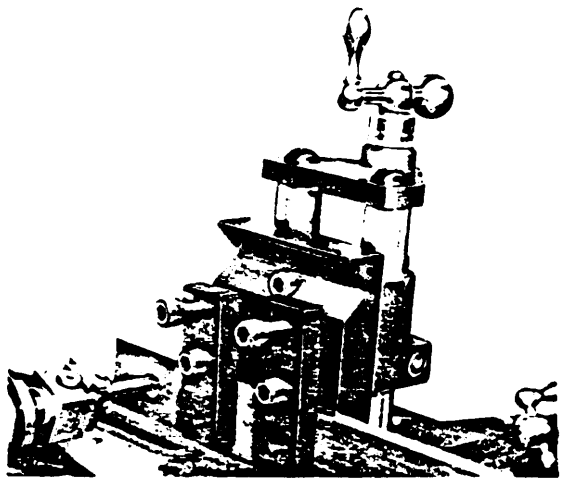


FIG. 3

LAYOUT

Holes can be laid out using the cross feed of the lathe and the vertical feed of the fixture. Use the compound feed to control depth and for locating angular holes. See Figure 4.

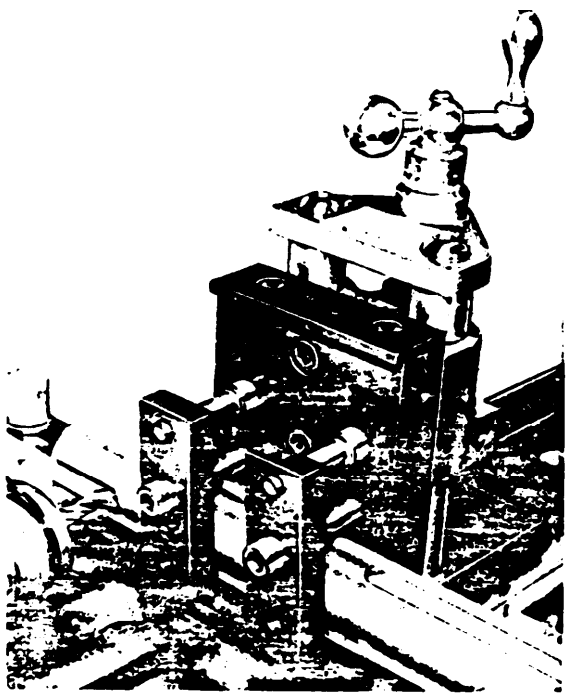


FIG. 2

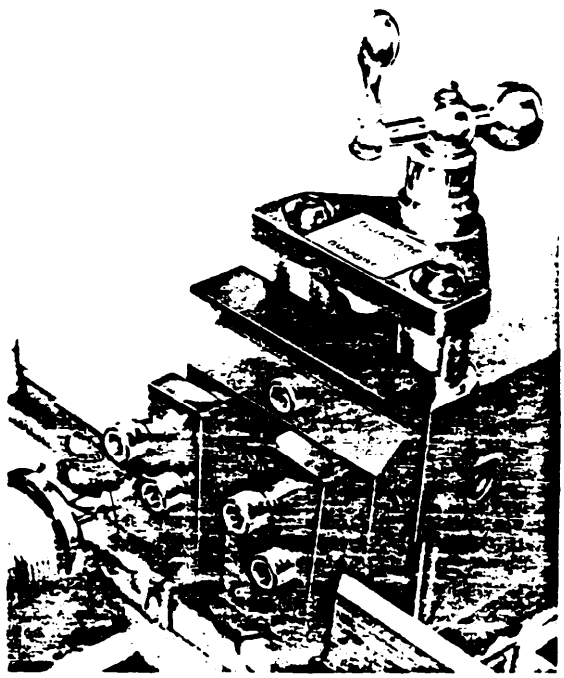


FIG. 4

INDEXING

The workpiece is accurately indexed by use of the large graduated collar. The method of centering the workpiece is as follows:

1. Visually center the workpiece in the graduated collar and lightly tighten the 3 set screws against the workpiece.

2. Using a micrometer, measure across all 3 set screws. See Figure 6. Total the 3 readings and divide by 3.

3. Loosen the top set screw and adjust the other 2 set screws to the dimension obtained in Step 2. Lock these 2 set screws with jam nuts. Tighten the top set screw against the workpiece. Recheck all three settings with the micrometer.

   Example: Using .751 diameter stock and with readings of 3.058, 3.085, and 3.071 totaling 9.214, dividing by 3, the reading should be 3.071. The 3 set screws should be adjusted to the 3.071 dimension.

When machining a quantity of like parts having exactly the same diameter, two of the set screws can be kept securely tightened with the jam nuts after centering the graduated collar for the first machined part. After machining, the graduated collar is removed by loosening the screw which does not have a lock nut. The collar can then be used for machining the remaining parts without having to measure the concentricity each time.

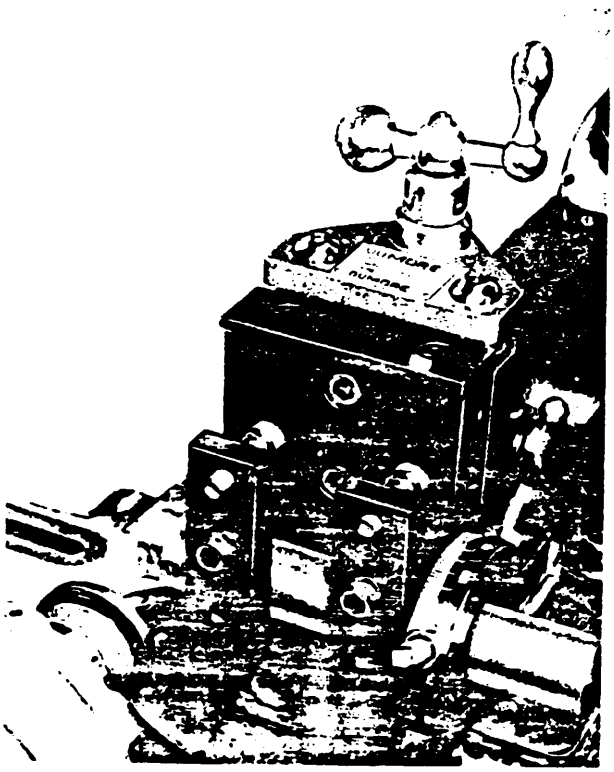


FIG. 5

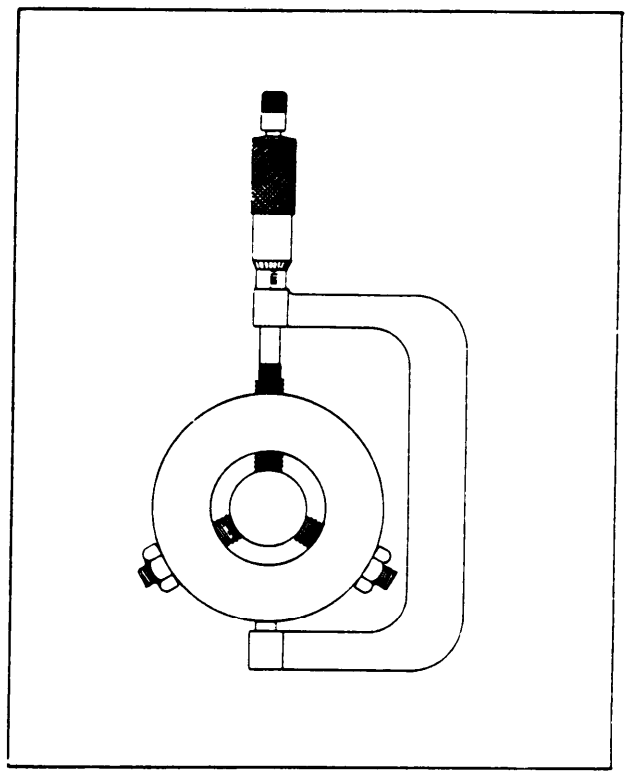


FIG. **6**

INTERNAL KEYWAY CUTTING

Internal keyways are cut with the same type of set-up as used for boring, see Fig. 7. The fixture is mounted on the lathe compound and having the fixture plate parallel to the lathe bed. Mount the boring bar in the V groove keeping the tool slot of the boring bar in a vertical position, so that the cutter may be brought up to the top position of the workpiece bore. Use the lathe cross slide to center the cutter with the bore of the workpiece. Feed upward with the fixture. Complete cutting of the keyway in a series of draw cuts, keeping the lathe spindle motionless.

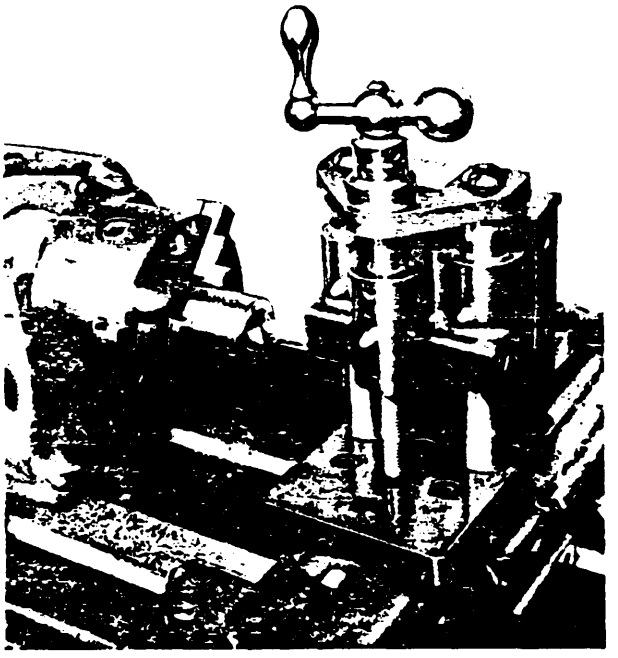


FIG. 7

LEAD SCREW BACKLASH

If backlash develops in the lead screw, it is removed either by eliminating end play in the top cap, or by adjusting the fit-up of the lead screw bushing.

Inside the graduated collar is a threaded retainer collar. This threaded collar governs the tightness or preload on the lead screw thrust bearings. Removing the end play between the top cap and lead screw is accomplished by tightening the threaded retainer collar until a slight binding is felt, and then locking the threaded collar with the set screw.

End play between the lead screw and the main body housing is controlled by the lead screw bushings. The lower bushing is the one normally adjusted by turning to the left after releasing the set screw. Turn the bushing until slight binding begins and then lock in position.

If the lead screw bushing threads have become worn, adjustment of the bushing is made by turning to the right so that the opposite sides of the thread are brought into use.

ASSEMBLING HOUSING AND POSTS

If the guide posts have been removed from the milling fixture, the main body housing serves as an assembly jig for correct location of the posts.

Position the two guide posts on the fixture base and tighten the bottom post screws lightly. Slide the main body housing onto the guide posts and down to rest on the base. Tighten the bottom post screws securely. Then raise the main body housing to the top of the guide posts and assemble the fixture cap on the posts. Securely tighten the screws that hold the top cap to the posts. The main body housing should move freely over its full travel from cap to base allowing no binding because of improper alignment.

APPENDIX

BASIC ISSUE ITEMS LIST

Section 1. INTRODUCTION

1. Scope

This appendix lists items which accompany the Lathe Fixture or are required for installation, operation, or operator's maintenance.

2. General

This Basic Issue Items List is divided into the following sections:

a. Basis Issue Items — Section II. A list of items which accompany the Lathe Fixture and are required by the operator/crew for installation, operation, or maintenance.

b. Maintenance and Operating Supplies. Not applicable.

3. Explanation of Columns

The following provides an explanation of columns in the tabular list of Basis Issue Items, Section II.

a. Source, Maintenance, and Recoverability Codes (SMR), Column 1.

(1) Source Code, indicates the selection status and source for the listed item. Source codes are —

Code	*Explanation*
C	Obtain through local procurement. If not obtainable from local procurement, requisition through normal supply chanels with a supporting statement of nonavailability from local procurement.
P	Applied to repair parts which are stocked in or supplied from GSA/DSA, or Army Supply system, and are authorized for use at indicated maintenance categories.

(2) Maintenance code, indicates the lowest category of maintenance authorized to install the listed item. The maintenance level code is —

Code	*Explanation*
C	Operator/crew

(3) Recoverability code, indicates whether unserviceable items should be returned for recovery or salvage. Items not coded are expendable. Recoverability code is:

Code	*Explanation*
R	Items which are economically repairable at direct and general support maintenance activities and are normally furnished by supply on an exchange basis.

b. Federal Stock Number, Column 2. This column indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

c. Description, Column 3. This column indicates the Federal item name and any additional description of the item required. A part number or other reference number is followed by the applicable five-digit Federal supply code for manufacturers in parentheses.

d. Unit of *Measure (U/M), Column 4.* A two character alphabetic abbreviation indicating the amount or quantity of the item upon which the allowances are based, e.g., ea.

e. Quantity Incorporated in Unit, Column 5. This column indicates the quantity of the item used on the Lathe Fixture.

f. Quantity Furnished with Equipment, Column 6. This column indicates the quantity of an item furnished with the equipment.

g. Illustration, Column 7. This column is divided as follows:

(1) *Figure Number, Column 7a.* Indicates the figure number of the illustration in which the item is shown.

(2) *Item Number, Column 7b.* Indicates the callout number used to reference the item in the illustration.

4. Explanation of Columns in the Tabular List of Maintenance and Operating Supplies

Not applicable.

5. Special Information

When requisitioning a C source (local procurement) item identified only by a manufacturer's part number, it is mandatory that the following information be furnished the Supply Officer:

a. Manufacturer's code number (5 digit number preceding the colon in the descriptive column).

b. Manufacturer's part number (the number, and sometimes letters, following the colon, ((a) above). Dashes, commas, or other marks must be included exactly as listed.

c. Nomenclature exactly as listed herein, including dimensions if necessary.

d. Name of manufacturer of end item (from cover of TM or manufacturer's name plate).

e. Federal stock number of end item (from TM) .

f. Manufacturer's model number (from TM or name data plate, preferably name/data plate).

g. Manufacturer's serial number (from name data plate).

h. Any other information such as type, frame number, and electrical characteristics, if applicable.

i. If DD Form 1348 is used, fill in all blocks except 4, 5, 6, and Remarks field, in accordance with AR 725-50. Complete forms as follows :

(1) In blocks 4, 5, and 6, list manufacturer's code and manufacturer's part number (as listed in description column).

(2) In Remarks field, list noun name (repair part), end item application (FSN of end item), manufacturer, model number (end item), serial number (end item), and any other pertinent information such as frame number, type, etc.

6. Abbreviations

Abbreviations	Explanation
hdl	handle(d) (s)
lg	long or length
o/a	overall
thd	thread
UNF	Unified Fine Thread
w	wide, width
w/	with

7. Federal Supply Code

Federal Supply Code	Manufacturer
18797	Dumore Company Racine, Wisconsin

8. Report of Equipment Publication Improvements

Reports of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to DA Publications) and forwarded direct to the Commanding General, Headquarters, U.S. Army Weapons Command, ATTN: AMSWE-SMM-P, Rock Island Arsenal, Rock island, Ill. 61201.

Section II. BASIC ISSUE ITEMS LIST

(1) Source maint. and recov. code			(2) Federal stock No.	(3) Description	(4) Unit of issue	(5) Qty. inc. in unit	(6) Qty. furn. with equip.	(7) Illustration	
(a) Source	(b) Maint	(c) Recov.						(a) Fig.No.	(b) Item No.
				TOOLS AND EQUIPMENT FOR FIXTURE, LATHE, METAL CUTTING: 8349(18797)(3465-022-8817)					
C	C	R	----------	CASE,CARRYING: metal, w/hdl,R-479-0041 (18797)	EA	1		A-1	1
C	C		----------	CLAMP, INDEXING RING: 844-0017(18797)	EA	1		A-1	5
C	C		----------	CLAMP,MOUNTING: lathe fixture, 844-0016 (18797)	EA	1		A-1	4
C	C		----------	CLAMP,STOCK: material holding, 844-0018 (18797)	EA	2		A-1	2
C	C	R	----------	FIXTURE,LATHE, METAL CUTTING: 8349(18797)	EA	1		A-1	3
P	C		5120-198-5392	KEY,SOCKETHEAD SCREW: hex type, L-hdl, 5/32in.w across flats,2-1/2 in. lg arm	EA	1		A-1	18
P	C		5120-240-5274	KEY,SOCKETHEAD SCREW: hex type, L-hdl, 5/16in. w across flats,3-3/4 in. lg arm	EA	1		A-1	19
P	C		5120-198-5390	KEY,SOCKETHEAD SCREW: hex type, L-hdl, 3/8in. w across flats,4-1/4in. lg arm	EA	1		A-1	20
C	C		----------	NUT,INDEXING RING CLAMP: 645-0273(18797)	EA	1		A-1	6
C	C		----------	RING, INDEXING: 502-0136 (18797)	EA	1		A-1	7
P	C		5305-274-2585	SCREW,CAP,SOCKET HEAD: l/2-20UNF, full lg thd, lin. lg o/a	EA	2		A-1	10
P	C		5305-274-2586	SCREW,CAP,SOCKET HEAD: l/2-20UNF, full lg thd, l-1/4in. lg o/a	EA	2		A-1	11
P	C		5305-274-2587	SCREW,CAP,SOCKET HEAD: l/2-20UNF, l.25in. lg thd, l-1/2in. lg o/a	EA	2		A-1	12
P	C		5305-274-2588	SCREW,CAP,SOCKET HEAD: l/2-20UNF,l.25 in. lg thd, l-3/4in. lg o/a	EA	2		A-1	13
P	C		5305-274-2589	SCREW,CAP,SOCKET HEAD: l/2-20UNF,l.25 in. lg thd, 2in. lg o/a	EA	2		A-1	14

(1) Source maint. and recov. code			(2) Federal stock No.	(3) Description	(4) Unit of issue	(5) Qty. inc. In unit	(6) Qty. furn. with l quip.	(7) Illustration	
(a) Source	(b) Maint	(c) Recov.						(a) Fig.No.	(b) Item No.
P	C		5305-274-2590	SCREW, CAP, SOCKET HEAD: l/2-20UNF, 1.25 in. lg thd, 2-1/4 in. lg o/a	EA	2		A-1	15
P	C		5305-274-2591	SCREW, CAP, SOCKET HEAD: l/2-20UNF, 1.25 in. lg thd, 2-1/2 in. lg o/a	EA	2		A-1	16
P	C		5305-274-2593	SCREW, CAP, SOCKET HEAD: l/2-20UNF, 1.25 in. lg thd, 3 in. lg o/a	EA	2		A-1	17
c	C		----------	SPACER, CLAMP, INDEXING RING : 645-0273(18797)	EA	1		A-1	8
c	C		----------	WASHER, CLAMP, INDEXING RING: R-768-0552 (19797)	EA	1		A-1	9

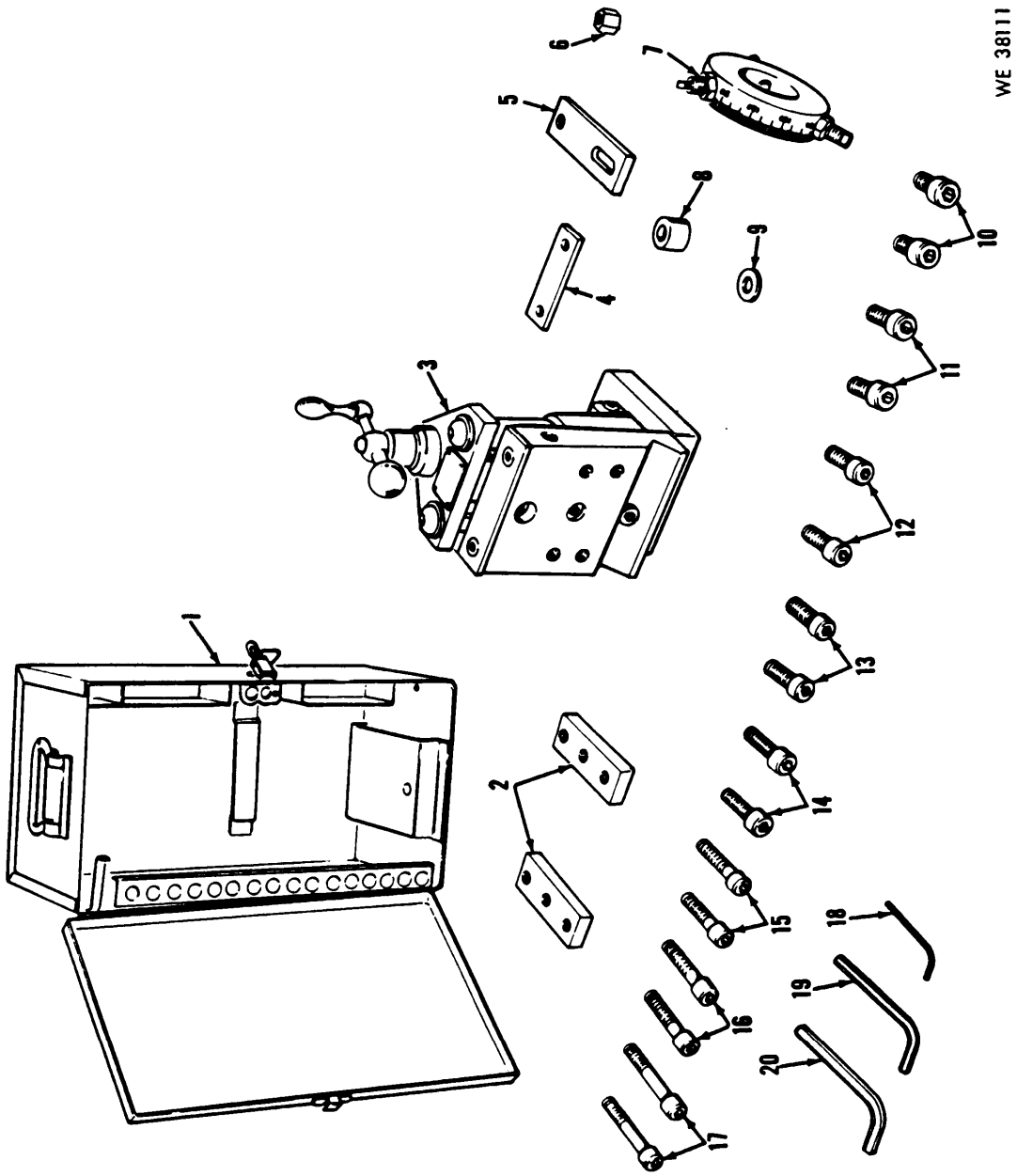


Figure A-1. Fixture, lathe, metal cutting.

By Order of the Secretary of the Army:

HAROLD K. JOHNSON,
General, United States Army,
Chief of Staff.

Official:

KENNETH G. WICKHAM,
Major General, United States Army,
The Adjutant General.

Distribution:

Active Army:

USASA (1)
DCSLOG (1)
CNGB (1)
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CofEngrs (3)
CofSptS (2)
Dir/Trans (2)
ACSC-E (1)
USCONARC (3)
USAMC (2)
ARADCOM (2)
ARADCOM Rgn (2)
OS Maj Comd (2)
USATECOM (1)
USAAVCOM (5)
LOGCOMD (3)
USAWECOM (75)
USACDCEC (10)
USASETAF (1)
USAARENBD (2)
Armies (3) except
Seventh (5)
Eighth (5)
Corps (2)
USAC (2)
USACMLCS (2)
USA Msl & Mun Cen & Sch (2)
USAQMS (2)
USMA (1)
JPG (1)
USATCFE (1)
Army Dep (3) except
TOAD (5)
MAAG (3)
Arsenal (2)
FLDMS (2) except
Ft Knox (10)

Units org under fol TOE:
(2 copies each)

3-47
3-500 (EA, EB FA-FD)
5-600
5-605
5-607
7
9
9-7
9-9
9-25
9-26
9-65
9-66
9-67
9-75
9-127
9-197
9-227
9-317
10-237
10-415
10-445
10-448
10-500 (ED, HK, HO)
11-155
11-158
17
17-100
29-1
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29-86
29-105
29-311
37
37-100
47
55-458
55-500 (ID, IE, KE)
57
57-100

NG: State AG (3)

*USAR*s None

For explanation of abbreviations used, see AR 320-50.

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