DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATOR'S MANUAL

LATHE, ENGINE, FLOOR MOUNTED, SLIDING BED GAP, 17 TO 28 IN. RATED SWING, 50 IN. OPEN AND 30 IN. CLOSED BETWEEN CENTERS, 5-HP, 208-440-V, 3-PH, 60-C (LEBLOND MACHINE TOOL COMPANY MODEL 17/28" REGAL) (3416-725-3508) AND LATHE, ENGINE, FLOOR MOUNTED, PLAIN BED GAP, 17 TO 26 IN. RATED SWING, 30 IN. BETWEEN CENTERS, 3-HP, 208-416-V, 3-PH, 50/60-C (LEBLOND MACHINE TOOL COMPANY MODEL 17" REGAL) (3416-828-3714)

This copy is a reprint which includes current pages from Change 1.

HEAD(QUARTERS, DEPARTMENT OF THE ARMY
MARCH 1965

Change
No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, *10 May 1973*

Operator's Manual
LATHE, ENGINE, FLOOR MOUNTED, SLIDING BED GAP, 17 TO 28 IN. RATED SWING, 50 IN. OPEN AND 30 IN. CLOSED BETWEEN CENTERS, 5-HP, 208-440-V, 3-PH, 60-C (LeBLOND MACHINE TOOL COMPANY MODEL 17/28" REGAL) (3416-725-3508)
AND LATHE, ENGINE, FLOOR MOUNTED, PLAIN BED GAP, 17 TO 26 IN. RATED SWING, 30 IN. BETWEEN CENTERS, 3-HP, 208-416-V, 3-PH, 50/60-C (LeBLOND MACHINE TOOL COMPANY MODEL 17" REGAL) (3416-828-3714)

TM 9-3416-221-10, 30 March 1965 is changed as follows:

Page 66. The following paragraphs are added.

Reporting of Equipment Publication Improvements

The reporting 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 Publications) and forwarded direct to: Commander, US Army Weapons Command, ATTN: AMSWE-MAS-SP, Rock Island, IL 61201.

Components of the End Item

Parts included with the end item and considered as components of the end item configuration are listed in table 1.

Table 1. Components of the End Item - LATHE, ENGINE (3416-725-3508)

Components	*Part No.*	*(FSCM)*	*Components*	*Part No.*	*(FSCM)*
ATTACHMENT, TAPER:	D-76B-U	35377	ARBOR, DRILL CHUCK:	GGG-C-350	81348
BELT, V:	A85	61463	CHUCK, DRILL:	GGG-C-645	81348
BOX, COLLET:	CB1	75078	KEY, DRILL CHUCK:	GGG-C-350	81348
BOX, COLLET:	CB2	75078	COLLET:	J-910	75078
CENTER, LATHE:	ND1A175	35377	COLLET:	J-911	75078
CENTER, LATHE:	LP-7	50038	COLLET:	J-912	75078
CENTER, LATHE:	R-4	50038	COLLET:	J-913	75078
CHUCK, COLLET, LATHE:	91-T	75078	COLLET:	J-914	75078
CHUCK, INDEPENDENT JAW:	12214CE5	15567	COLLET:	J-915	75078
CHUCK, UNIVERSAL JAW:	8236E5	15567	COLLET:	J-916	75078
CHUCK, DRILL: w/arbor and		:	COLLET:	J-917	75078
key: c/o		:	COLLET:	J-918	75078

Table 1. Components of the End Item - LATHE, ENGINE (3416-725-3508) - Continued

Components	*Part No.*	*(FSCM)*
COLLET:	J-919	75078
COLLET:	J-920	75078
DIAL, THREAD INDICATING:	D-98B-10-U	35377
DOG, LATHE: bent tail 1/2 cap	00D565	81348
DOG, LATHE: bent tail 1 cap	00D565	81348
DOG, LATHE: bent tail 1-1/2 cap	00D565	81348
DOG, LATHE: bent tail 2 cap	00D565	81348
DOG, LATHE: bent tail 3 cap	00D565	81348
DOG, LATHE: bent tail 4 cap	00D565	81348
DOG, LATHE: clamp bent tail 1-3/4 cap	00D565	81348
DOG, LATHE: clamp bent tail 3-1/2 cap	14	03914
GEAR, QUADRANT:	D-99B-12-S	35377
HOLDER, CUTTING TOOL: boring type	00H581	81348
HOLDER, CUTTING TOOL: cutting-off type	00-H-581	81348
HOLDER, CUTTING TOOL:	22	03914
HOLDER, CUTTING TOOL:	52	03914
HOLDER, CUTTING TOOL:	2L	03914
HOLDER, CUTTING TOOL:	2R	03914
HOLDER, CUTTING TOOL:	2S	03914
JAWS, FACE PLATE:	416C	15567
KNURLING TOOL, SELF-CENTERING LATHE:	3K2	03914
PLATE, FACE:	H-9A-261A	35377
PLATE, FACE:	10B-70/A	35377
PLUG, RUBBER. MACHINE COLLET:	CP012	75078
PLUG, RUBBER, MACHINE COLLET:	P-913-CP914	75078
PLUG. RUBBER. MACHINE COLLET:	CP-915-CP916	75078
PLUG. RUBBER. MACHINE COLLET:	CP-917-CP-918	75078
PLUB. RUBBER. MACHINE COLLET:	CP-919-CP920	75078
POST, TOOL:	D-45A-198	35377
REST, TOOL:	D-53B-PL-U	35377
REST, STEADY:	D-51-PL-U	35377
SOCKET, TAPER SHANK TOOL:	00S550	81348
STOP, CARRIAGE:	D-138-B-U	35377
STOP, THREAD CUTTING:	D45B-190	35377
WRENCH, BOX:	441	35377
WRENCH, SPANNER:	DR55	35377
WRENCH. T-HANDLE:	971D	90045

Table 2. Components of the End Item-LATHE, ENGINE: (3416-828-3714)

Components	*Part No.*	*(FSCM)*
ADAPTER, HEADSTOCK:	D96-230SU	35377
ADAPTER, TAILSTOCK:	D25B-30SU	35377
ARBOR, DRILL CHUCK:	GGGC350	81348
BOX, COLLET:	CB1	75078
BOX, COLLET:	CB2	75078
CENTER, LATHE:	ND1A17S	35377
CHUCK, COLLET, LATHE:	91T	75078
CHUCK, DRILL: w/key, c/o of		
CHUCK, DRILL:	18N	75078
KEY, DRILL CHUCK:	K5	75078
CHUCK, INDEPENDENT JAW:	1164	95571
CHUCK, INDEPENDENT JAW:	51810L1	61691
CHUCK, UNIVERSAL JAW:	2534	95571
CHUCK, UNIVERSAL JAW:	16308L1	61691
COLLET:	J-910	75078
COLLET:	J-911	75078
COLLET:	J-912	75078
COLLET:	J-913	75078
COLLET:	J-914	75078
COLLET:	J-915	75078
COLLET:	J-916	75078
COLLET:	J-917	75078
COLLET:	J-918	75078
COLLET:	J-919	75078
COLLET:	J-920	75078
COVER, LATHE:	for 17" Regal plain bed gap Mfg Code 35377	
DIAL, CHASING:	D-98B-10U	35377
DOG, LATHE:	00D565	81348
DOG, LATHE:	00D565	81348
DOG, LATHE:	E505	50038
DRIFT, DRILL:	NO. 1	13130
DRIFT, DRILL:	105-NO. 2	13130
DRIFT, DRILL:	105-NO. 3	13130
GEAR SET, METRIC TRANSPOSING:	D-99B-E	35377
HOLDER, CUTTING TOOL:	1B	03914
HOLDER, CUTTING TOOL:	17	03914
HOLDER, CUTTING TOOL:	00H581	81348
HOLDER, CUTTING TOOL:	52	03914
HOLDER, CUTTING TOOL:	2L	03914
HOLDER, CUTTING TOOL:	2R	03914
HOLDER, CUTTING TOOL:	2S	03914

Table 2. Components of the End Item-LATHE, ENGINE: (3416-828-3714) - Continued

Components	*Part No.*	*(FSCM)*	*Components*	*Part No.*	*(FSCM)*
JAWS, FACE PLATE:	6216C	15567	PLUG, RUBBER MACHINE COLLET:	CP917-C9918	75078
KNURLING TOOL, SELF-CENTERING LATHE:	3K2	03914	PLUG, RUBBER, MACHINE COLLET:	CP919-CP920	75078
PLATE, FACE:	H-94A-26/A	35377	REST, STEADY:	D-51B-R-U/1	35377
PLUG, RUBBER, MACHINE COLLET:	CP012	75078	SOCKET, TAPER SHANK TOOL:	00S550	81348
PLUG, RUBBER, MACHINE COLLET:	CP913-CP914	75078	SOCKET, TAPER SHANK TOOL:	00S550	81348
			SOCKET, TAPER SHANK TOOL:	00S550	81348
PLUG, RUBBER, MACHINE COLLET:	CP915-CP916	75078	STOP CARRIAGE:	D-138B-U	35377

Page 67. The Appendix is superseded as follows:

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

Section I. INTRODUCTION

1. Scope
This appendix lists basic issue items and items troop installed or authorized required by the crew/operator of the engine lathe.

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, engine lathe (3416-725-3508). Basic issue item list does not apply to engine lathe (3416-828-3714).

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 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 Equipment (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 LIST

(1) Federal stock No.	(2) Description Reference Number & Mfg. Code / Usable on code	(3) Unit of meas	(4) Qty furn with equip	(5) Illustration (a) Fig. No.	(5) Illustration (b) Item No.
5120-224-4659	KEY, SOCKET HEAD SCREW: hex type. L-type hdl, 1/4 in. w across flats, 3-5/32-3-11/32 in. min. to max arm lg GGGK00275 (81348)	EA	1	30	11
5120-240-5274	KEY, SOCKET HEAD SCREW: hex type, L-type hdl, 5/16 in. w across fiats, 3-21/32-3-27/32 in. min. to max arm lg GGGK00275 (81348)	EA	1	30	12
5120-198-5391	KEY, SOCKET HEAD, SCREW: hex type, L-type hdl, 1/2 in. w across flats, 5-5/32-5-11/32 in. min. to max arm lg GGGK00275 (81348)	EA	1	30	13
5120-240-5268	KEY, SOCKET HEAD SCREW: hex type, L-type hdl, 9/16 in. w across flats, 5-21/32-5-27/32 in. min. to max arm lg GGGK00275 (81348)	EA	1	30	14
5120-224-2510	KEY, SOCKET HEAD SCREW: hex type, L-type hdl, 5/8 in. w across flats, 6-5/32-6-11/32 in. min. to max arm lg GGGK00275 (81348)	EA	1	30	15
5120-555-0205	WRENCH, OPEN END, FIXED: dble-hd type, 15 deg angle of hd, 1/2 and 5/8 opngs, 1/4 hd thk, 6-5/8 in. o/a lg GGGW636 (81348)	EA	1	30	8
5120-187-7126	WRENCH, OPEN END, FIXED: dble-hd type, 15 deg angle of hd, 9/16 and 5/8 opngs. 19/64 hd thk. 6-3/8 o/a lg GGGW636 (81348)	EA	1	30	9
5120-187-7129	WRENCH, OPEN END FIXED: dble-hd type. 15 deg angle of hd, 3/4 X 13/16 opngs, 3/8 hd thk. 8 o/a lg GGGW636 (81348)	EA	1	30	10

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 (6)
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)
Ft Belvoir (2)
LXAD (2)
TEAD (16)
Army Depots (2)
AVSCOM (10)

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

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *30 March 1965*

TM 9-3416-221-10 is published for the information and use of all concerned.

By Order of the Secretary of the Army:

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

Official:
J. C. LAMBERT,
Major General, United States Army,
The Adjutant General.

Distribution:
Active Army:

DCSLOG (1)
CNGB (1)
TSG (1)
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CofSptS (2)
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USCONARC (3)
USAMC (12)
ARADCOM (2)
ARADCOM Rgn (2)
USASMC (6)
OS Maj Comd (1)
Base Comd (1)
Armies (3) except
- Second USA (2)
- Seventh USA (5)
- EUSA (5)

Corps (2)
USA Corps (2)
Ft Belvoir (2)
LOGCOMD (3)
USAWECOM (75)
Army Dep (2) except
- LXAD (1)
- TEAD (16)

USAAVCOM (10)
Units org under fol TOE:
- 11-587 (2)

NG: None.
USAR: None.
For explanation of abbreviations used, see AR 320-50.

YOUR NEW LeBLOND LATHE

Your new LeBlond Lathe, one of the finest machines of its kind in the world, has been designed by highly trained engineers of long experience, and built by craftsmen with care and pride. It will give you a long life of precision work with minimum maintenance if the fundamentals of good operation are followed. This book is intended to aid you by providing specific instructions for operating and maintaining your lathe.

The Parts Section supplies you with the correct information to order necessary parts. Each unit is illustrated either in sectional or exploded view or both. Each part is listed by name, key number and quantity.

INDEX

SPECIFICATIONS FOR LEBLOND REGALS

SIZE	13"	15"	17"	19"
Capacity				
Swing over bed & carriage wings.............	14-1/2"	15-1/2"	17-3/4"	19-1/4"
Swing over cross slide............................	8-1/2"	9-1/2"	10-3/4"	12-1/4"
Distance between centers, base length.....	30"	30"	30"	30"
Size of tool-forged..................................	1/2" x 1"	1/2" x 1"	5/8" x 1-1/4"	5/8" x 1-1/4"
Size of tool holder	1/2" x 1-1/8"	1/2" x 1-1/8"	5/8" x 1-3/8"	5/8" x 1-3/8"
Steady rest capacity................................	1/2" to 4"	1/2" to 4"	1/2" to 6"	1/2" to 6"
Follow rest capacity	1/2" to 2-3/4"	1/2" to 2-3/4"	1/2" to 3-1/4"	1/2" to 3-3/4"
Face plate, small diameter	8"	8"	9-1/2"	9-1/2"
Face plate, large diameter.......................	14"	14"	17"	17"
Headstock				
Spindle speeds, number..........................	12	12	12	12
Spindle speed ranges:				
Low range, rpm	30 - 1200	30 - 1200	25 - 1000	25 - 1000
High range, rpm	45 - 1800	45 - 1800	38 - 1500	38 - 1500
Spindle bearings number of.....................	3	3	3	3
Spindle bearing diameters:				
Front	2-1/2"	2-1/2"	3-5/16"	3-5/16"
Center	.2-3/8"	2-3/8"	2-7/8"	2-7/8"
Rear	2-5/32"	2-5/32"	2-9/16"	2-9/16"
Front spindle bearing, Timken precision				
Outside diameter	4-1/4"	4-1/4"	5-3/8"	5-3/8"
Radial load at 100 rpm, pounds.........	6484	6484	9239	9239
Thrust load at 100 rpm, pounds.........	5122	5122	7051	7051
Center spindle, roller bearing				
Outside diameter..............................	3-15/16"	3-15/16"	4-5/8"	4-5/8"
Radial load at 100 rpm, pounds.........	6305	6305	8510	8510
Rear spindle, ball bearing				
Outside diameter..............................	3-35/64"	3-35/64"	3-15/16"	3-15/16"
Radial load at 100 rpm, pounds.........	3400	3400	4070	4070
Spindle size of hole, straight....................	1-17/32"	1-17/32"	1-49/64"	1-49/64"
Spindle size of hole taper	Morse #5	Morse #5	Amer. Std. 200	Amer. Std. 200
Spindle size of center, Morse...................	#3	#3	#4	#4
Spindle nose, taper key drive, size...........	L-0	L-0	L-1	L-1
Spindle nose, diameter large end of taper.	3-1/4"	3-1/4"	4-1/8"	4-1/8"
Bed				
Length, standard	5' 6-1/4"	5' 6-1/4"	6' 3"	6' 3"
Width..	12-3/16"	12-3/16"	14-3/8"	14-3/8"
Depth...	10-1/4"	10-1/4"	11-1/2"	11-1/2"
Carriage				
Length of bed..	18-3/8"	18-3/8"	21"	21"
Bearing surface, square inches	62	62	79	79
Bridge width..	6-1/4"	6-1/4"	7-7/8"	7-7/8"
Cross slide travel without taper att...........	8-7/8"	8-7/8"	11-1/4"	11-1/4"
Cross slide travel with taper att.	7-7/8"	7-7/8"	9-5/8"	9-5/8"
Compound rest travel..............................	3-7/8"	3-7/8"	4-3/8"	4-3/8"
Feeds-Threads				
Feed changes, gear or belt drive	48	48	48	48
Feed range, inches per revolution............	002-.120	.002-.120	.0023-.132	.0023-.132
Thread changes gear drive only...............	48	48	48	48
Threads per inch, range	4 to 224	4 to 224	2 to 112	2 to 112
Leadscrew diameter and threads per inch...	1", 6	1", 6	1-3/16", 4	1-3/16", 4
Tailstock				
Spindle diameter.....................................	1-15/16"	1-15/16"	2-7/16"	2-7/16"
Center, Morse	#3	#3	#4	#4
Spindle travel & set over right or left.........	.5", 1"	5", 1"	7", 1"	7", 1"

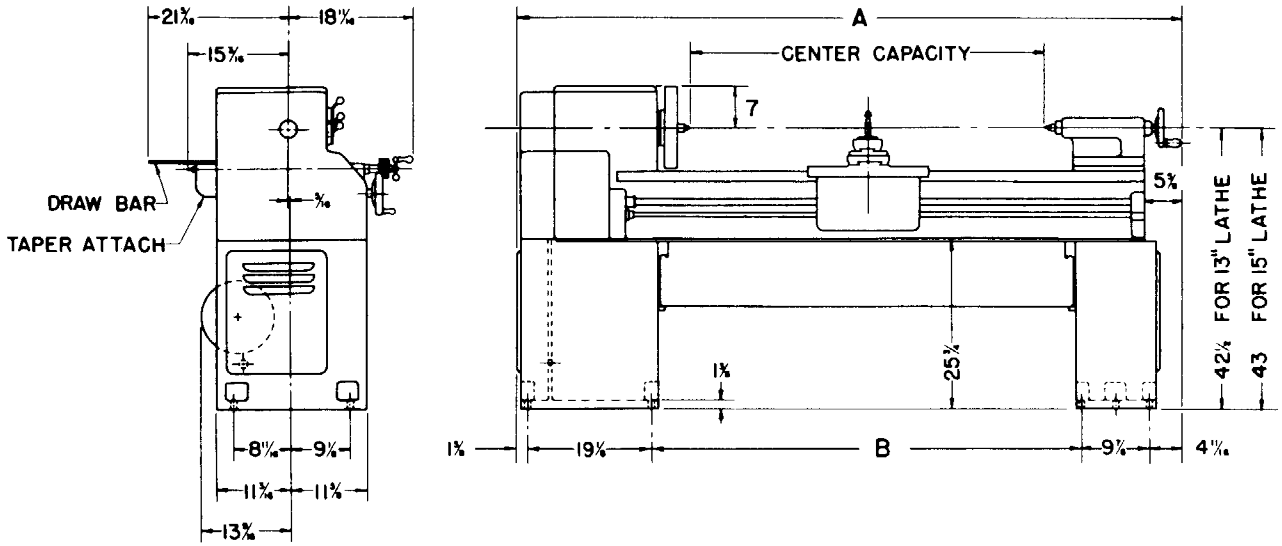
SPECIFICATIONS FOR LEBLOND REGALS (Continued)

SIZE	13"	15"	17"	19"
Taper Attachment				
Minimum taper per foot	3-1/2"	3-1/2"	3-1/2"	3-1/2"
Turns at one setting	10"	10"	15"	15"
Motor Recommendations				
Maximum hp and rpm	3, 1800	3, 1800	5, 1800	5, 1800
Weight & Dimensions (Base Length)				
Net weight, pounds	2345	2425	3300	3390
Domestic shipping weight, pounds	2645	2725	3700	3790
Export shipping weight, pounds	3145	3225	4300	4390
Net weight, each additional 12" of bed pounds	125	125	220	220
Floor space required	78" x 40"	78" x 40"	89" x 50"	89" x 50"
Distance, spindle center to floor	42-1/2"	43"	42"	42-3/4"

SPECIFICATIONS FOR LEBLOND REGAL PBG AND SBG LATHES

Specifications of the 17" and 19" Regal Engine Lathes apply to Gap Models except for those noted here.

SIZE	17" PBG	19" PBG	17/28" SBG
Capacity			
Swing through gap	26"	27-1/2"	35"
Center Distance, bed closed			30"
Center Distance, bed extended			50"
Gap face plate diameter	24"	27"	24"
Distance face plate to end of gap	10-1/16"	10-1/16"	
Distance spindle nose to end of gap	10-3/16"	10-3/16"	
Weight and Dimensions (30" center distance)			
Net weight, pounds	3900	4000	4250
Domestic shipping weight, pounds	4300	4400	4650
Distance spindle center to floor			42"
Overall length, bed closed			7' 6"
Overall length, bed extended			9' 2"
Carriage			
Length on bed	22"	22"	22"
Bearing surface, square inches	92	92	92
Cross slide travel, with or without taper attachment	15-1/2"	15-1/2"	15-1/2"
Bridge width	7-7/8"	7-7/8"	7-7/8"
Bed			
Base length, 30/50 centers closed			6' 3-1/4"
Top bed length base machine			50-3/8"
Width			14-3/8"
Depth, top			9-1/2"
Depth, lower			9-3/4"

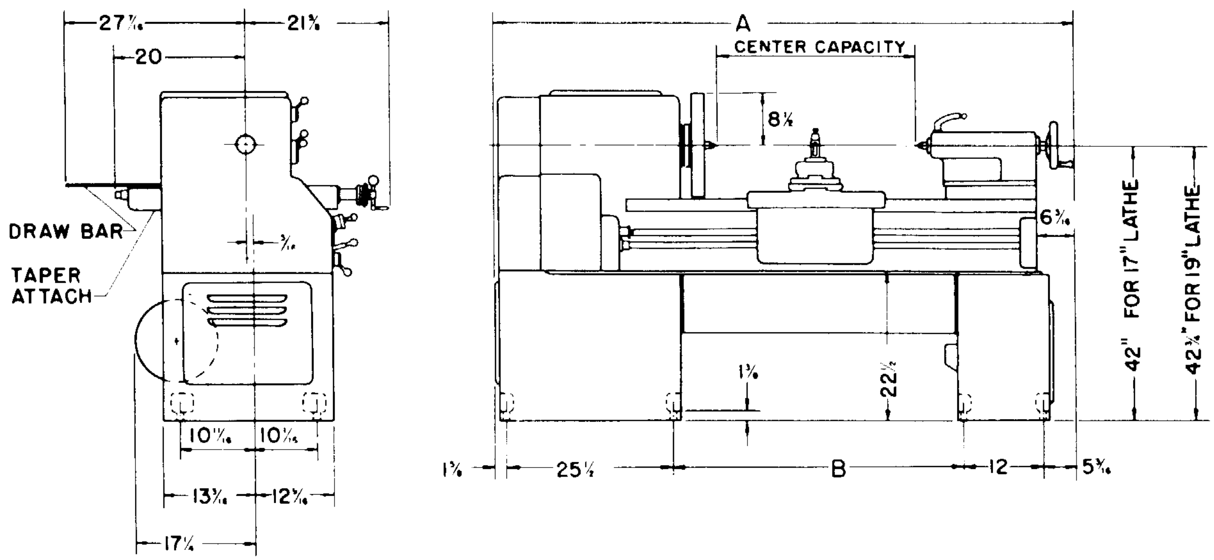


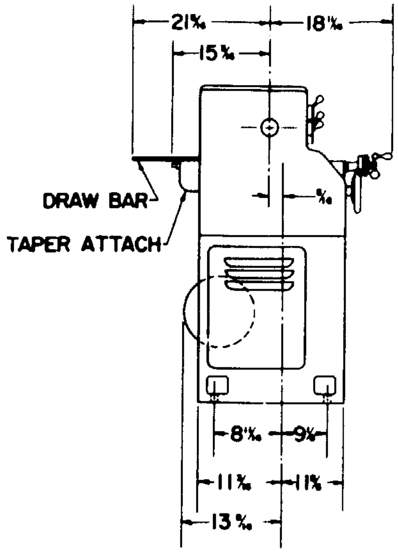
13" - 15" REGAL STANDARD

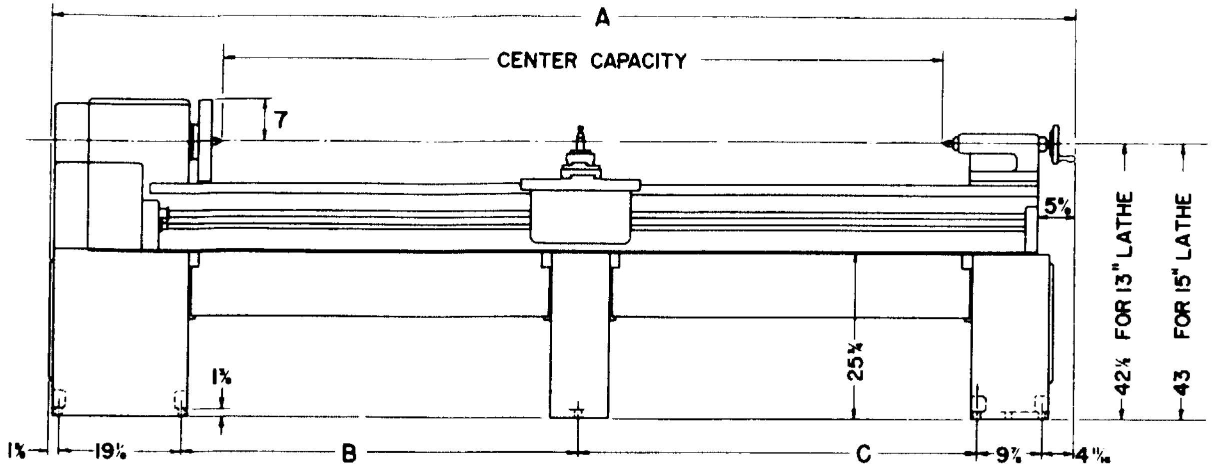
CENTER CAPACITY	BED LENGTH	A	B
30"	5' - 6¼"	77¾"	42 7/16"
42"	6' - 6¼"	89¾"	54 7/16"
54"	7' - 6¼"	101¾"	66 7/16"

17" - 19" REGAL STANDARD

CENTER CAPACITY	BED LENGTH	A	B
30"	6' - 3"	88 3/16"	43⅞"
42"	7' - 3"	100 3/16"	55⅞"
54"	8' - 3"	112 3/16"	67⅞"

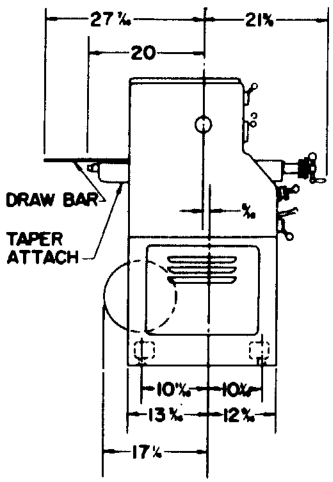


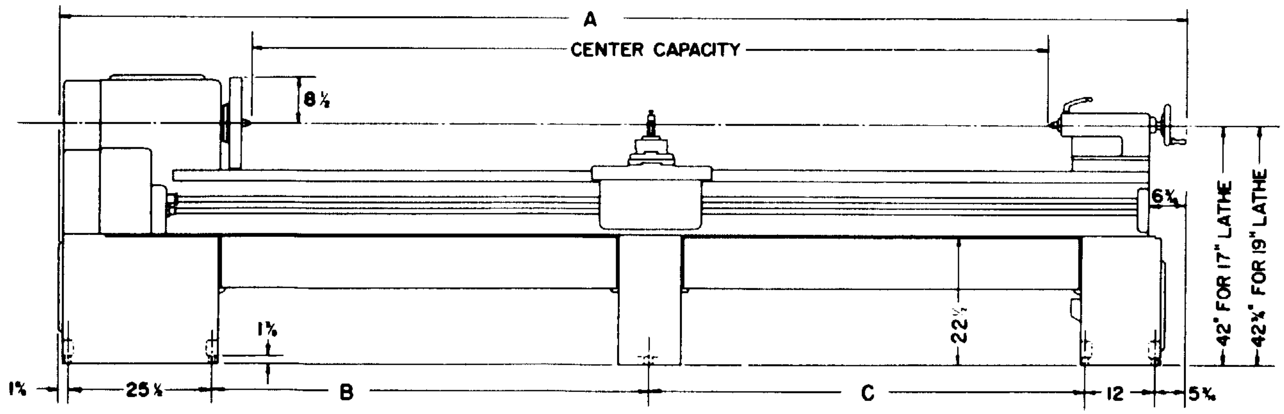




13" - 15" REGAL WITH CENTER LEG

CENTER CAPACITY	BED LENGTH	A	B	C
78"	9' - 6¼"	125¾"	45 3/16"	45¼"

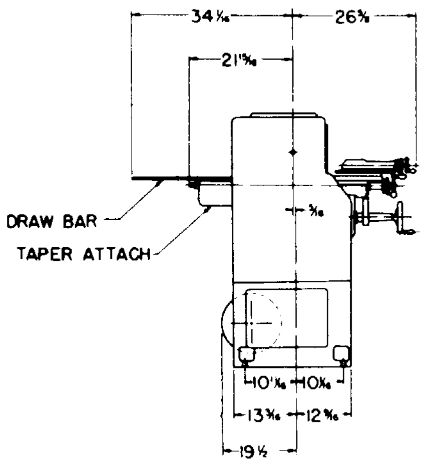


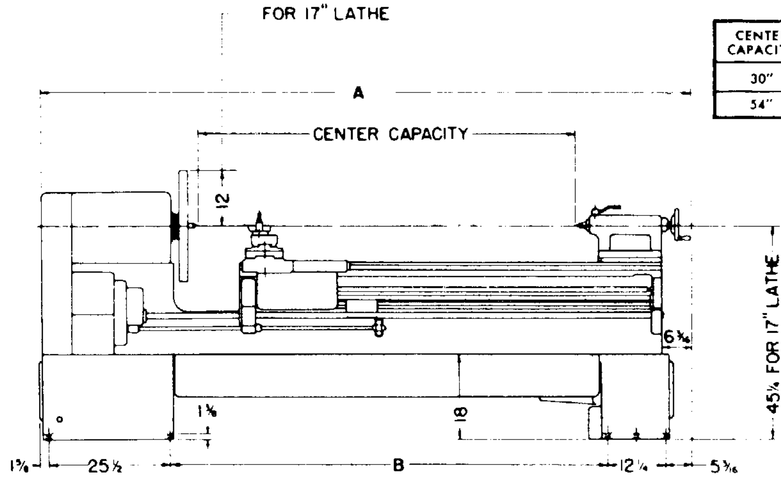


17" - 19" REGAL WITH CENTER LEG

CENTER CAPACITY	BED LENGTH	A	B	C
78"	10' - 3"	136 3/16"	45 15/16"	45 15/16"
102"	12' - 3"	160 3/16"	57 15/16"	57 15/16"

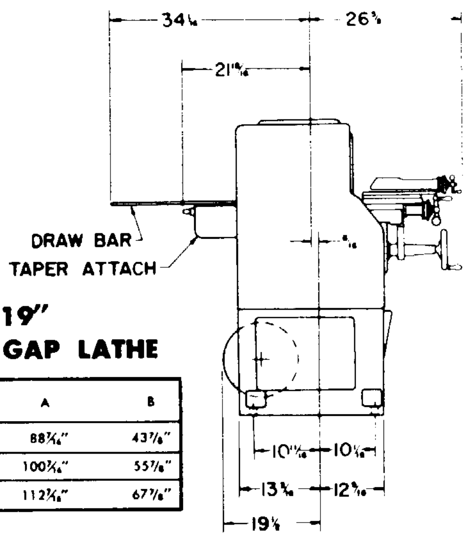
CENTER CAPACITY	BED LENGTH	A	B	C
126"	14' - 3"	184 3/16"	69 15/16"	69 15/16"
150"	16' - 3"	208 3/16"	81 15/16"	81 15/16"

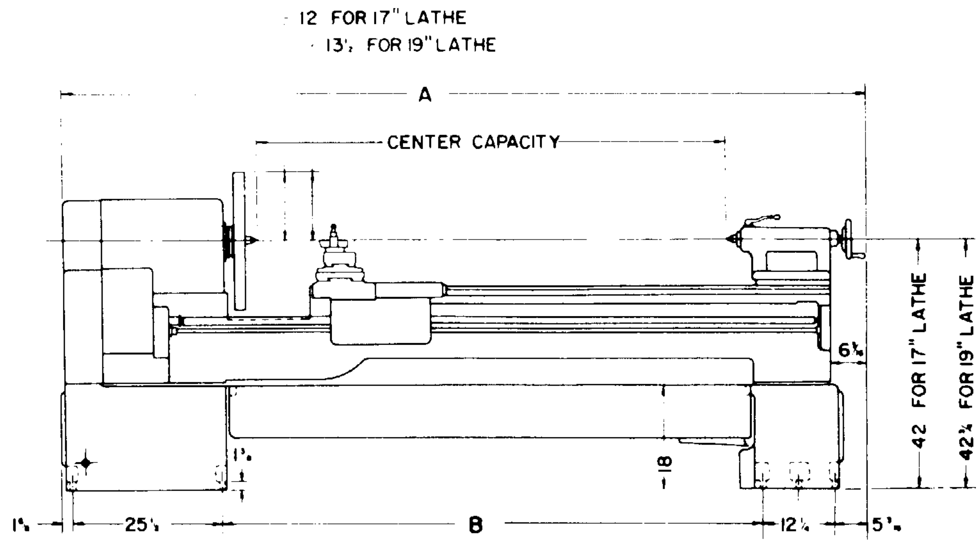




17" SLIDING BED GAP REGAL

CENTER CAPACITY	BED LENGTH	A CLOSED	A EXTENDED	B
30"	6' - 3 1/4"	7' - 3 13/16"	8' - 11 13/16"	43 7/8"
54"	8' - 3 1/4"	9' - 3 13/16"	11' - 11 13/16"	67 7/8"





17" & 19" REGAL PLAIN GAP LATHE

CENTER CAPACITY	BED LENGTH	A	B
30"	6' - 3 1/4"	88 7/16"	43 7/8"
42"	7' - 3 1/4"	100 7/16"	55 7/8"
54"	8' - 3 1/4"	112 7/16"	67 7/8"

INSTALLATION

Foundation

The floor upon which your lathe is to be set should be flat and heavy enough to support the weight of the machine without noticeable deflection. If such a floor is not available, it may be necessary to construct a special foundation in order to eliminate frequent need for releveling and re-alignment.

Concrete Floors. In order to minimize machine vibration and deflection, a reinforced concrete floor serves as the best foundation. All Regal lathes require a minimum of 6" reinforced concrete.

Wood Floors. Many shop floors are made of wood block or some other type of vibration dampening material which covers a concrete sub-floor. This material should be taken up and the area filled in with concrete to the floor level.

In case the floor is of timber construction, the usual practice is to cut a hole in the floor and build up with reinforced concrete from the ground.

Second Floor. Your Regal should always be located over a pillar or supporting beams. If no such support is available, one or more pillars should be installed, if your Regal is to remain accurate and level.

Cleaning

For shipment, all oil was drawn from the reservoirs, and all polished and unpainted surfaces were well covered with a slushing compound.

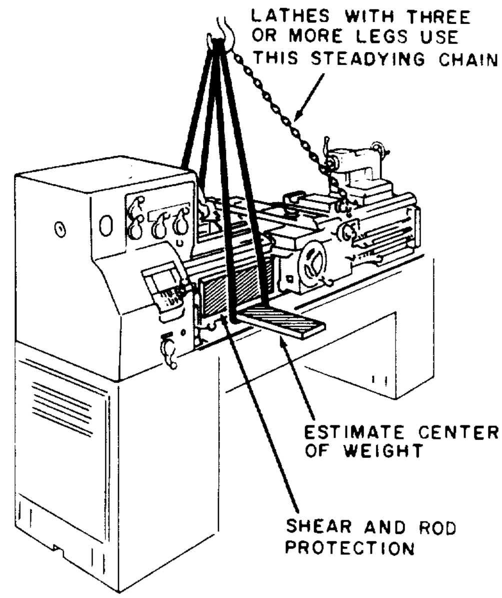
The slushing compound is best removed by washing with kerosene or benzene. Do not use an air hose. Air pressure will drive in between the bearing surfaces any grit and dirt picked up in transit. Raise the cross slide guards, clean the screw and slides, remove the bedway wipers and clean thoroughly. When all the unpainted and polished surfaces are wiped clean, put a light coat of machine oil on them to protect them from rust. Frequent cleaning and oiling of these parts will increase the useful life of your Regal.

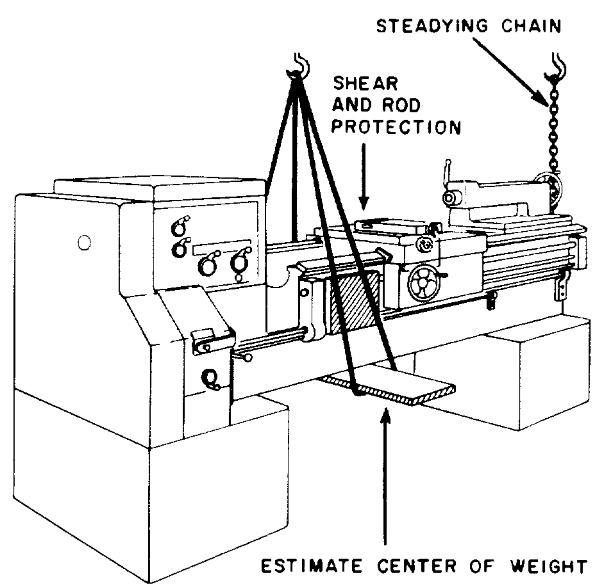
Before starting the machine, consult the section on "Lubrication" for the proper lubrication points and the fillers for the reservoirs. Make sure the machine is properly lubricated before starting in order to avoid damaging any bearing surfaces.

Moving and Lifting

It is usually convenient to leave the machine on the skids when removing the crating. Thus the machine can be moved on the skids to its final location. This is particularly true where crane facilities are not available.

Fig. 1





However, if cranes are available, the following instructions should be followed. For Regals with two legs, insert a heavy board or flat steel bar under the bed at the estimated center of weight. Sling on each end of the board or bar using another board to protect the control rods. Raise the machine slightly to assure proper balance before continuing. (See Figure 1).

For Regals with three or more legs, follow the same procedure but add a chain from the crane hook to a cross girth at the tail end of the lathe. This will help steady the set-up.

NOTE: Make sure the carriage clamp screw is loosened before moving the carriage. The carriage and tailstock may be moved to help balance the lathe for moving by crane.

Electrical Connections

It is important that the voltage and other specifications of the motor are the same as those of your service lines. The name plate on the motor specifies the operating voltage and whether the current should be direct (D.C.) or alternating (A.C.). If alternating current is specified, the voltage, frequently (cycles and number of phases) are shown. If there is any doubt about the current and voltage, call your local power and light company and verify the supply. If there is a difference, advise us before connecting, and avoid burning out or otherwise damaging the motor.

Leveling

Your LeBlond Regal Lathe was aligned and accurately checked with the lathe in perfect level. In order to reproduce this accuracy in your shop, it is essential that your lathe be leveled properly. Too much emphasis cannot be placed on the importance of properly leveling your lathe. In order to hold the level and prevent the leveling screws from digging into a concrete floor, smooth steel plates are furnished with each machine. Measuring approximately 2-1/2" in diameter, 3/8" thick, and countersunk 1/16" deep for seating the leveling screws, these plates should be surfaced against the concrete. If necessary, chip the concrete before placing the plates under the leveling screws. See Figure 2. Never use a resilient type of vibration dampening device, such as rubber under the leveling screws. These devices make it difficult, if not impossible to maintain accurate level.

If hold-down bolts are used, set the lathe in position, mark and then drill. Do not lay off holes in advance from the dimensional drawings.

Next, level the lathe by means of leveling screws provided using a precision level. An ordinary carpenter's level or combination square level is not sensitive enough. See Figure 3.

Proceed as follows: <u>Level across</u> the bedways at both the head and the tailend, using parallel blocks on the front flat and the rear hardened way.

NOTE: The rear way of your Regal is .0625" higher than the front flat. Use gauge blocks to make up the difference. Leveling is accomplished by adjusting the leveling screws until the bubble is in the center of the glass bowl. If the bed of your machine has one or more center legs, level across them also. The reading must be exactly the same in all positions.

Then, level lengthwise on the rearway at the head and tail ends and at each center leg. if hold-down bolts are used, draw them to light contact after leveling. Do not tighten bolts excessively as this may twist the bed of the lathe out of level.

CAUTION: <u>You should always recheck your level after tightening the hold-down bolts</u>. Never bed the legs of your Regal in concrete as this will preclude any releveling of the machine.

Fig. 2

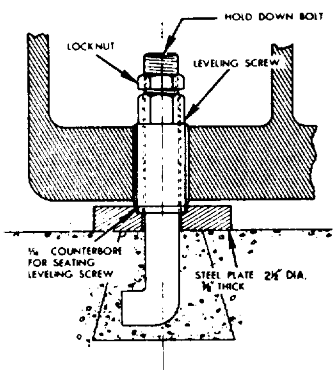
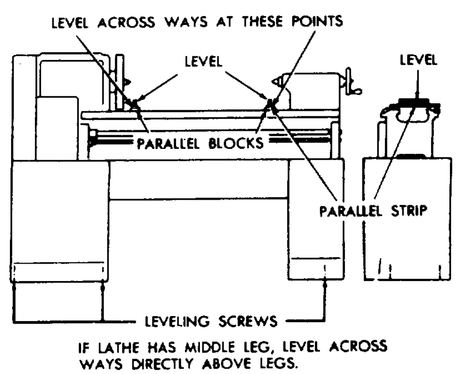
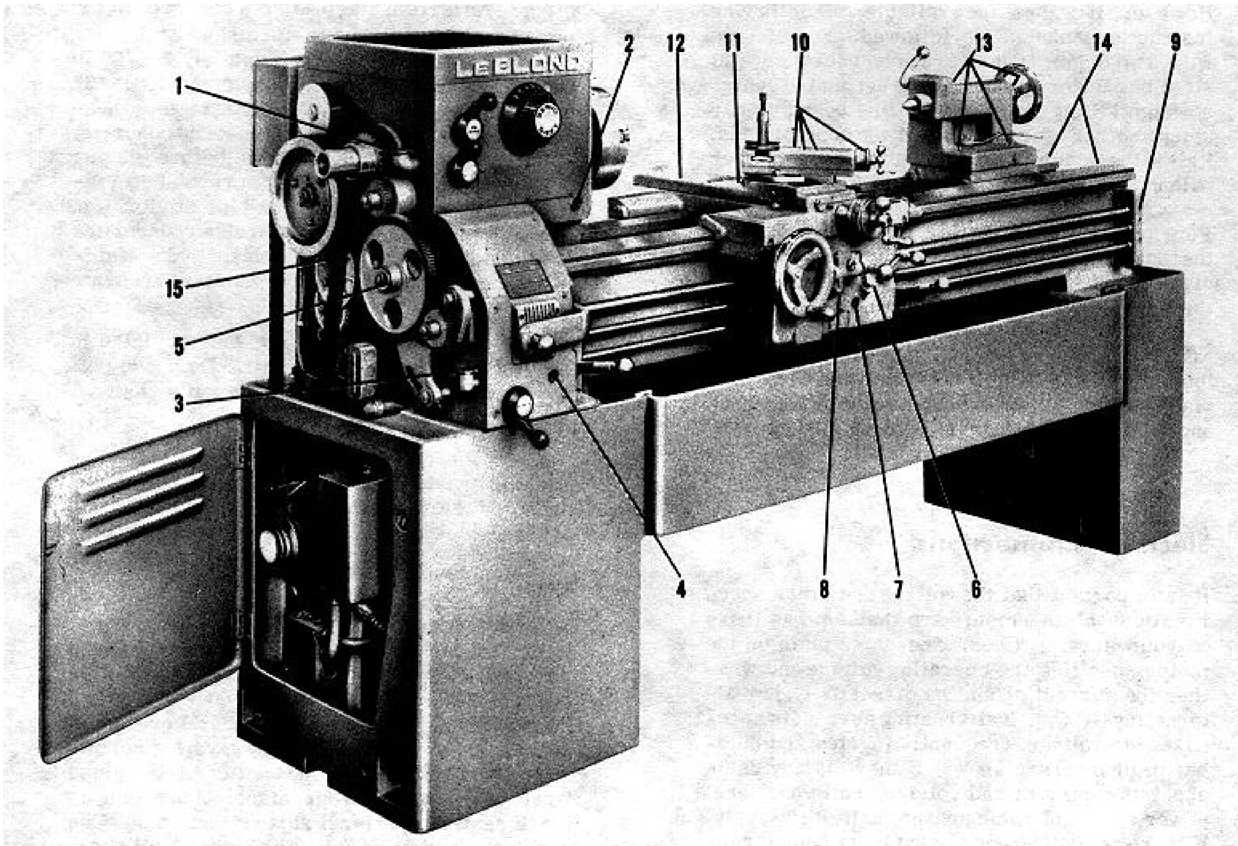


Fig. 3





LUBRICATION CHART

Station	Instructions	Station	Instructions
1 and 2	Headstock - Remove head end cover. Fill oil cup on side of head to level on oil sight gage.	9	Back Box - Fill oiler daily/
		10	Compound Rest - Fill oilers weekly.
		11	Cross Feed Nut - Remove screw and fill weekly.
3 and 4	Quick Change Box - Fill oil cup on side of quick change box to level on oil sight gage.	12	Taper Attachment - Fill oilers under hinged cover weekly.
5	Quadrant Gear - Oil quadrant gear. Lubricate weekly.	13	Tailstock - Fill oilers daily.
		14	Rear Vee-Way and Front Flat - Wipe clean and oil lightly before moving tailstock.
6, 7 and 8	Apron - Fill oil reservoir weekly to level on oil sight gage. Each day before starting lathe, pump plunger until oil appears in tell-tale hole at right-hand shear wiper; this oils carriage, bedways and cross slide.	15	Crawl-Speed (Machines with Servo-Shift Only) - Oil linkage weekly.
NOTE: Use high quality rust and oxidation inhibited oil, 300 S.S.U. at 100°F., for all lubrication.			

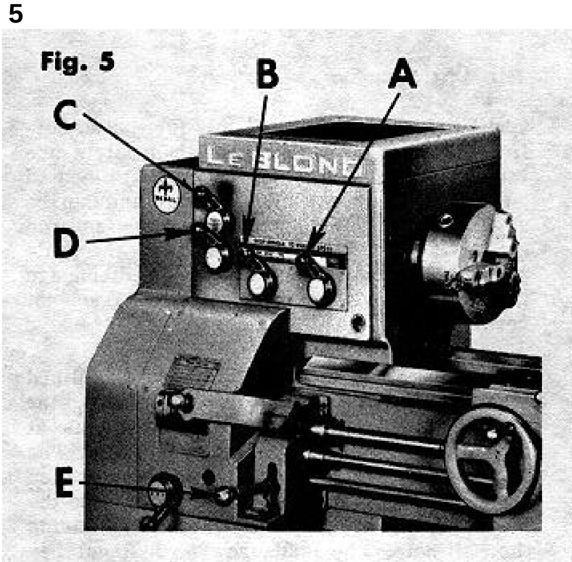
		13”	15”	17”	19”
Reservoir Capacities (In Quarts)	Head	6 quarts	9 quarts	13 quarts	18 quarts
	Quick Change Box	2 quarts	2 quarts	2 quarts	2 quarts
	Apron	1/2 quart	1/2 quart	1/2 quart	1/2 quart

To help you understand your Regal, you will find the following a general description, and operational procedure for each of the major units that make up your lathe.

Headstock

Your new Regal Headstock, Figure 5, provides eight (8) gear-driven spindle speeds and four (4) belt driven spindle speeds for smooth, quiet operation. No gears, other than the feedgears, are in mesh on the spindle when in the belt range. The speeds are easily selected by two levers (A) and (B), and a direct reading colorplate. The spindle is supported by three bearings, two Timkens and one Ball (rear) bearing.

Fig. 5



Electric Broke

Your machine is equipped with electric brake, you will find the power pack mounted on the rear of the bed by the headstock leg. This unit contains a rheostat, providing the operator a convenient means for adjusting the braking power.

Along with the electric brake, a five position drum-switch is included. The center position of the spindle control handle (E) applies the brake. A neutral position on either side of the center allows the spindle to coast for jogging, shifting gears or revolving the spindle by hand. The extreme up position of the handle will revolve the spindle forward. The extreme down position of the handle will revolve the spindle in reverse.

The spindle nose is an American Standard Type L taper key drive. The spindle speeds are always increased when moving the shifter levers to the left. The small shifter (C) at the upper left of the Headstock, is the reverse to the feed and leadscrew. The lower shifter (D), on the left of the head, is the feed drive compound, providing coarse and fine feeds and threads. Regal Headstocks have hardened steel gears for long life and trouble-free operation, and all shafts are supported on anti-friction bearings.

Servo-Shift (Fig. 6)

If your Regal is equipped with Servo-Shift, spindle speeds can be changed simply by turning dial (A) to the desired speed, and moving spindle control handle (B) to engage the brake. The headstock gears will be automatically shifted without further attention from the operator. Spindle speeds can be preselected at any time during the cutting operation, the shifting will not take place until the brake is engaged.

During the shifting cycle, always permit the crawl speed mechanism to oscillate the spindle several times before moving the spindle control handle to disengage the brake. This will insure complete gear engagement and prevent the possibility of clashing.

To "free wheel" the spindle, when inspecting or measuring workpieces, turn Servo-Shift dial (A) to the neutral position marked "N".

NOTE: The amount of spindle oscillation during the shifting cycle will vary according to the speed selected.

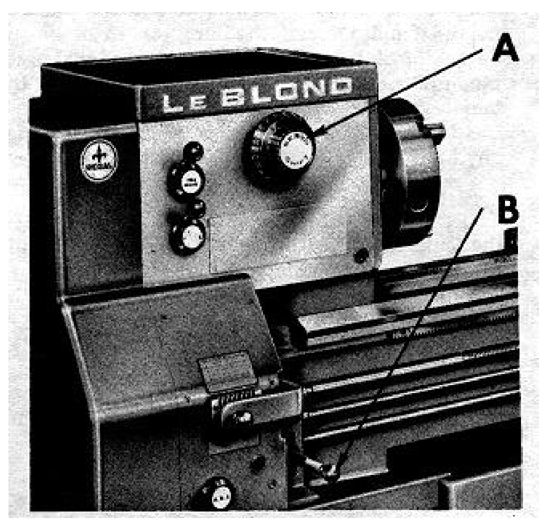
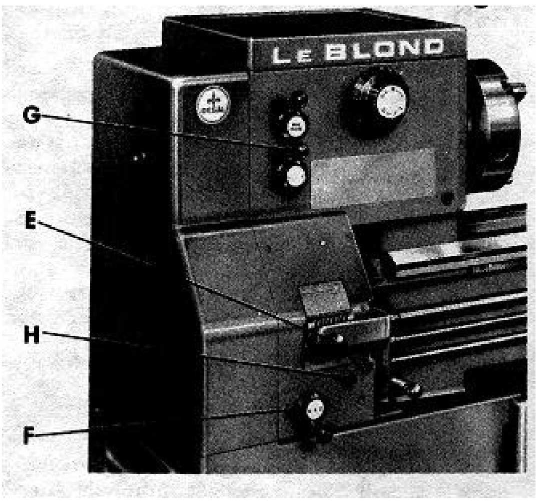


Fig. 6

Fig. 7



The feed reverse and compounding gears are entirely within the head. A single gear train on the end of the lathe eliminates overhang of the bearings and gives a powerful, quiet drive. The totally enclosed quick-change box is automatically lubricated from a reservoir. Oil level is indicated by visual sight gauge (H).

Forty-eight feed and thread changes are obtained by an eight position tumbler (E), a three position compound (F) in the feed box and a two position compound (G) on the headstock. Fine changes of feeds or threads are obtained as indicated on the index plate by pulling out the tumbler handle and depressing to disengage the tumbler gear, then sliding the tumbler along the sleeve to the proper location and lifting the handle to bring the gears into engagement. When the gears are in engagement, the plunger in the handle locks the tumbler in place. A series of slots milled in the shifter lock-plate mounted on the Quick Change Box above the handle and a pin engaging the slots, prevent the tumbler gear from engaging two gears at any one time.

The Direct Reading Index Plate is mounted on the Quick Change Box directly over the tumbler handle. The numbers on the plate refer to threads or feeds that the leadscrew and the gear combination will cut when the tumbler is engaged directly under the number on the index plate. "Coarse" and "Fine" refer to the location of the compound feed handle on the head and the letters refer to the position of the compound change lever on the feed box.

The feed drive from the head to the Quick Change Box consists of pick-off gears readily accessible by removing the endcover. This arrangement permits the use of metric translating gears and other gears to obtain special feeds and threads.

Feed Rod and Leadscrew (Fig. 8)

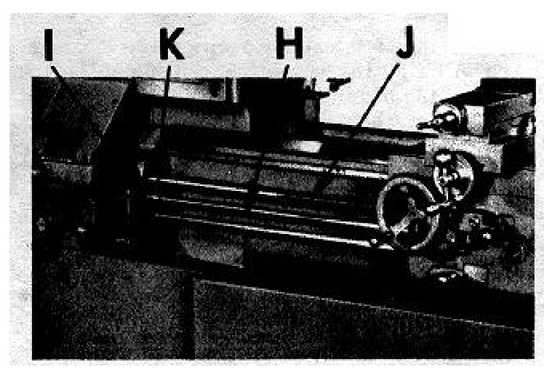
The Feed Rod (H) transmits the power from the Quick Change Box to the apron through a safety overload device (I) located at the Quick Change Box end of the Feed Rod. Should the carriage meet with any obstruction on the bed, the safety device will release and prevent damage to the feed mechanism of the lathe. As soon as the obstruction is removed, the feed safety device engages automatically.

The Leadscrew

The Leadscrew (J) is used only for thread cutting and may be disengaged when not in use through a sliding gear (K). This gear is located on the feed box end of the screw and can be engaged with, or disengaged from the feed rod gear by a short sliding movement on the leadscrew. When not chasing threads, disengage the sliding gear so the leadscrew does not revolve.

On some lathes of this type, where splined leadscrews are used to drive the feed, the leadscrew is subject to torsional strains at all times and soon becomes inaccurate. The key engaging the spline in the leadscrew also burrs the edges of the threads which cause the leadscrew to act as a tap constantly wearing the half nuts. The leadscrew on a Regal remains accurate for the life of the machine as it is not subject to these conditions.

Fig. 8



Apron

The Regal Apron (Figure 9) is a double-walled one piece casting in which all shafts and gears are supported on both ends. This unit is bolted securely to the carriage and contains the controls, gears, and other mechanisms for feeding the carriage and cross slide by hand or power. It also contains the half nuts controlled by lever (L) which engages the leadscrew for thread chasing.

Power is supplied to the apron through the bevel pinion which is keyed to the feed rod. Positive jaw clutches are employed to direct the power to the rack pinion for length feed and the cross feed screw for crossfeed. A single lever (M) is employed to engage both length and cross feeds. An instruction plate mounted to the left of the feed control lever indicates the position for cross and length feed. An interference device prevents the engagement of the half nuts and the feed at the same time. Do not attempt to force the feed control lever or the half nut lever when the other is engaged.

Feed Reverse Lever (X) gives feed reverse control at the apron in addition to normal feed reverse on the headstock. This feature is available on 17" and 19" Regals only.

The large hand wheel (N), through a gear reduction, revolves a rack pinion thus providing hand feed to the carriage.

The apron spindle control lever (W) is located on the right side of the apron.

The Carriage and Compound Rest

The carriage, an H-shaped casting, is fitted to and slides on the bedway; thus providing for longitudinal movement of the tool by hand or power.

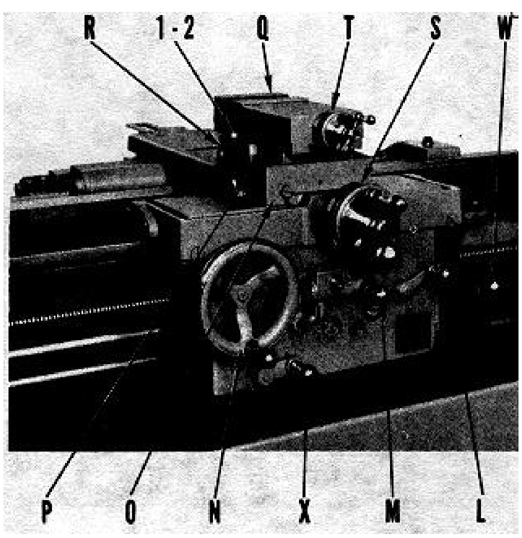


Fig. 9

The cross-slide often referred to as the bottomslide, (O), provides for cross motion of the tool by hand or power.

The swivel, (P), and the topslide, (Q), provide angular hand feed. To adjust the angle of the top slide, loosen nuts (1) and (2), swivel the unit to the desired angle as indicated by the graduation (R), and retighten nuts (1) and (2).

Both the crossfeed dial, (S), and the topslide dial, (T), read in diameter reduction .010 on the crossfeed dial advances or retracts the slide .005, thus reducing or increasing a given diameter by .010. The topsllde dial is calibrated in the same manner. However, the angle at which the topslide is set must be taken into consideration when computing tool advances. For this reason it is generally considered good practice to use a cross slide adjustment for sizing when turning.

Very often the topslide is used for controlling the depths of a facing cut by setting the top slide at 90 degrees. Under these conditions, the advance of the tool will be one half that shown on the dial.

It should be pointed out that the topslide dial is graduated in diameter reduction for use in sizing when the taper attachment is in use. The taper attachment bottomslide draw bar, Figure 17, in its locked position prevents the bottomslide from being moved.

CAUTION: The lathe operator should adjust the topslide flush with the cross-slide for maximum tool support whenever possible. Needless overhang of the topslide will very often result in chatter.

Tailstock

The tailstock unit (Figure 10) is used to support one end of the workpiece and to hold drills, reamers, taps, etc. This unit can be moved on the bedways to accommodate workpieces of different length within the capacity of the lathe. The tailstock consists of a top, bottom, clamp, spindle and handwheel.

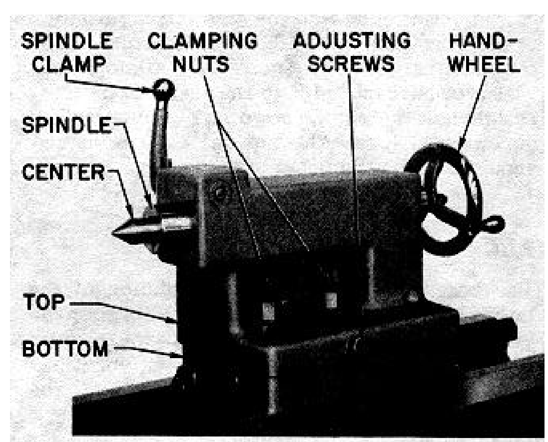


Fig. 10

The tailstock top is fitted to the bottom and held in position with a cross tongue. A side adjustment is provided to keep the center in line with the head, and for turning shallow tapers by offsetting the spindle in relation to the head.

Alignment of Centers

When zero marks are in line on the tailstocks top and bottom, centers are approximately in line. But due to the fact that an error of a .001" misalignment cannot be seen, a more sensitive test must be used for perfect straight turning.

A test bar (Figure 11) should be made with centered barstock; 2" diameter, 24" long and with a 1/4" undercut in the center. By taking a light cut at both ends and measuring with a micrometer, you can determine if the cut is straight or tapered.

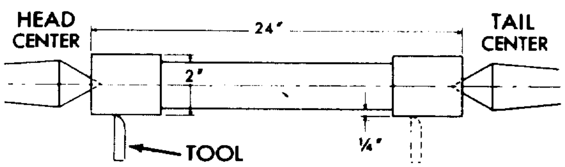


Fig. 11

If your lathe is cutting shallow tapers, the alignment of the tailstock center with the headstock is out of position. If the diameter is larger at the headstock, the tailstock top must be moved to the back of the lathe. If the diameter is larger at the tailstock, the tailstock top must be moved toward the front of the lathe.

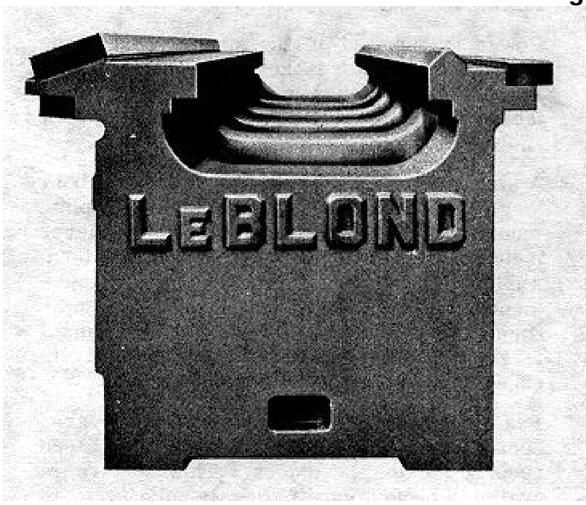
NOTE: Do not attempt to adjust side movement with the bed clamp locked in position. Be sure the clamp is only in snug position; this allows the top to move on the bottom. Always loosen the adjusting screw on the side of the tailstock in the direction you wish to move before turning the other screw to move the tailstock top. When you have moved it to the desired position, retighten the original screw. These adjusting screws only locate the top on the bottom and should only be tightened to a snug fit.

Bed

The bed (Figure 12) is the foundation of the lathe. It supports the functioning units and provides an accurate guideway for these units which move on it. Rigid in construction, it has been scientifically designed with heavy girths to minimize deflection.

The ways are constructed of hardened and ground graphite steel. Wear is kept to a minimum with the graphite acting as a lubricant, and a hardness of 62-64 Rockwell C (600 Brinell). These ways are replaceable in event of accidental damage but with ordinary care will outlast the lathe.

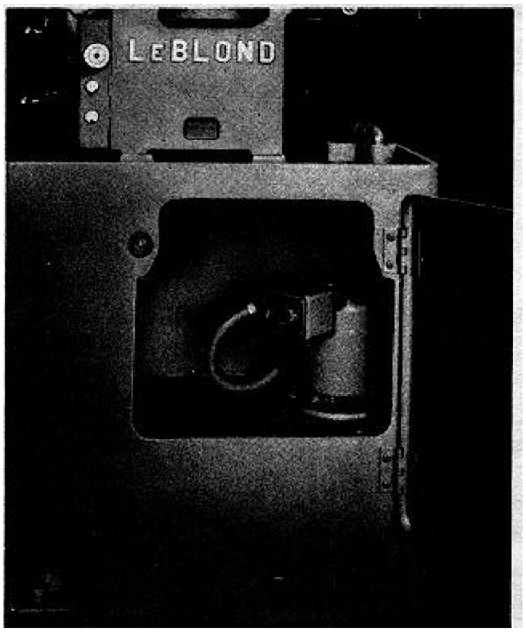
Fig. 12



Coolant System

The Regal lathe tail leg is of the completely enclosed type and houses the coolant system, (optional equipment). See Figure 13.

Fig. 13



ADDITIONAL INSTRUCTIONS

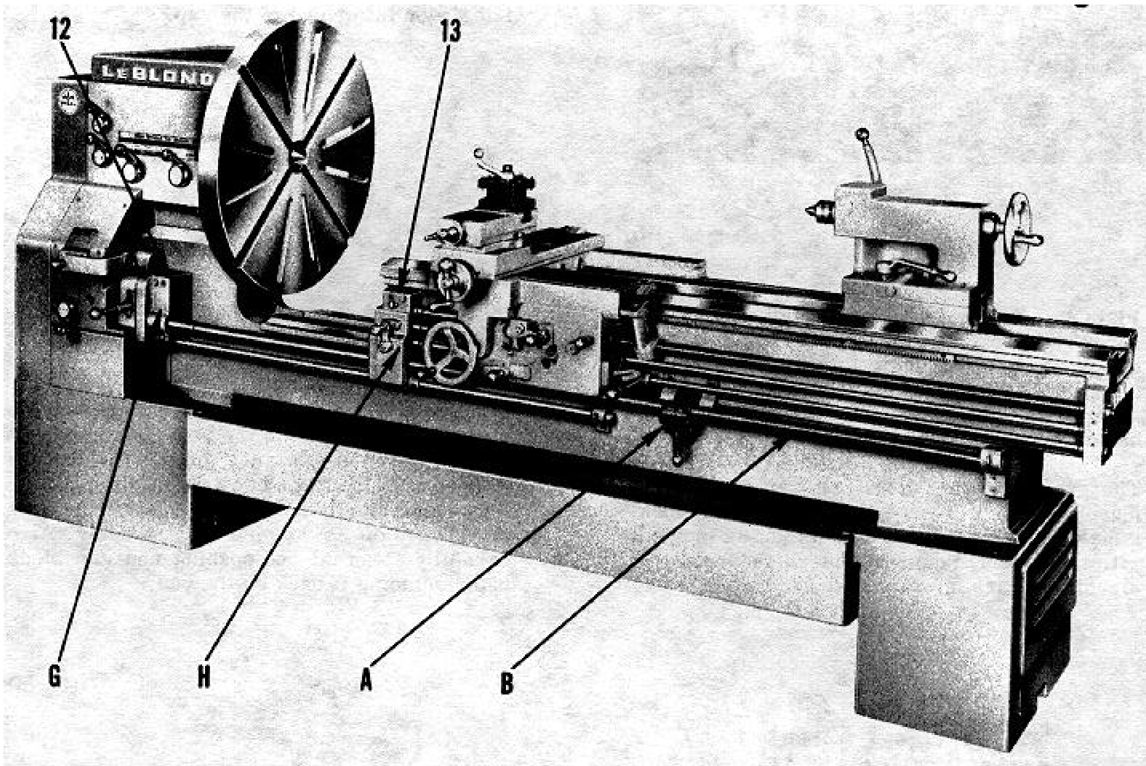
(Fig. 14)

On sliding bedgap Regal lathes additional daily lubrication should be performed at the following points.

(12) Bottom bed feed box
(13) Top bed feed box

Before moving top bed under power, wipe drive screw (B) clean from dirt and lightly oil. Always wipe bottom ways clean and oil before closing gap.

Fig. 14



Regal Sliding Bed Gap Lathe
(Fig. 14)

A sliding bed, a special carriage, apron arrangement and part of the feed mechanism differentiates this lathe from the regular Regal lathe. On the base length of the machine the gap may be opened to a maximum working distance of 20". For every bed increase increment of 12" the center distance will be increased by 18" with the bed fully extended.

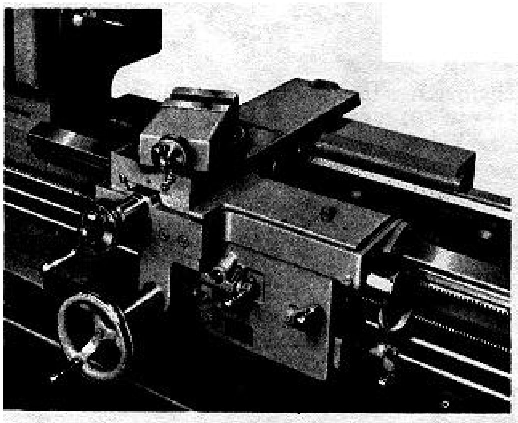
Feed is transmitted from the quick change box through transfer box (G) to the gap bed box (H) by means of an extension rod. The extension rod lies along the lower bed in order to keep the gap working area open. This rod is also used to traverse the top bed under power.

Lever (A), Fig. 14 engages the traverse nut to the drive shaft. The top bed slides along a vee-way on the bottom bed which keeps it in position.

CAUTION: Before moving the top bed be sure to loosen the clamp nuts found on the bed girths. Do not traverse the top bed in the spindle belt drive and do not exceed the fine feed range when in spindle gear drive.

On sliding bed gap lathes of 66" center distance and longer, one support jack is furnished to support the bed overhang. Raise the jack just enough to relieve the strain resulting from bed overhang but not enough to raise the top bed off the lower bed. Retighten the bed clamps by tightening the bolts next to the vee-way to insure proper alignment.

Fig. 15



A special carriage, Figure 15, is provided with the cross slide located at the left of the carriage wing. This allows the operator to place his tools to take full advantage of the gap. An extension rest (optional equipment) facilitates even fuller use of the gap.

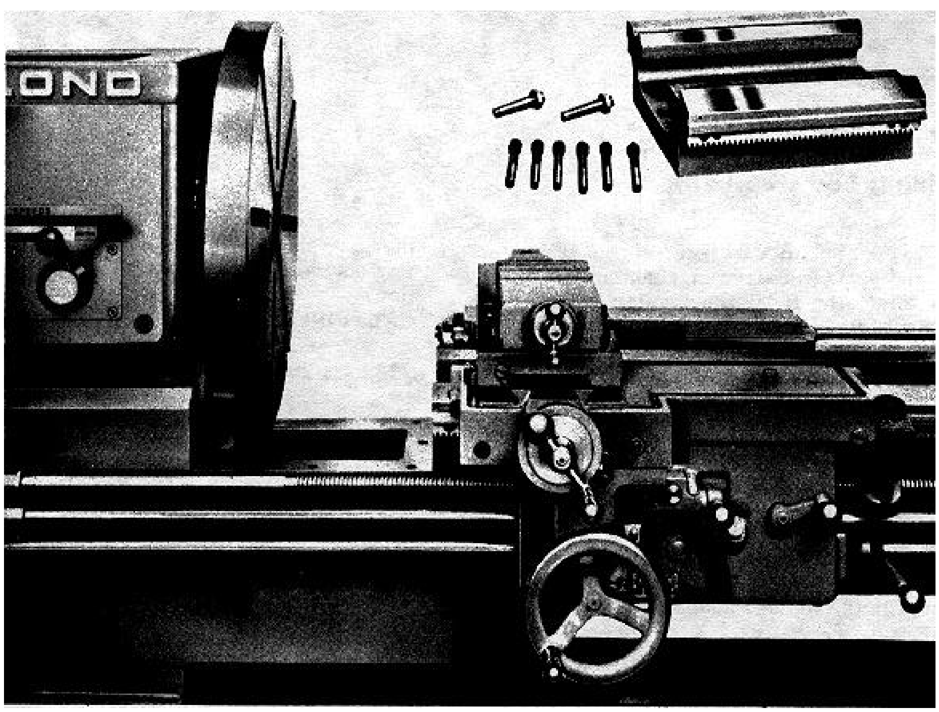
Regal Plain Bed Gap Lathe

Plain bed gap lathes differ only in their bed, apron and carriage construction. The carriage and apron are the same type as employed on the sliding bed gap lathe. The difference from a regular lathe lies in the cutout section of the bed called a gap.

The gap opening is fitted with an accurately machined block to match the bed. This block is held in place with six screws and is located with taper pins. Since this block is precision machined, care must be taken when removing it. Removal by an overhead crane is recommended in order to avoid jamming or wedging the block in the bed.

To remove the block, first take out the screws which hold the block in the bed. The taper pins which locate the block are threaded on top and the nuts must be turned down to pull these pins. When replacing the block make sure the nuts are backed off so the pins seat properly. Also carefully clean the bed opening and gap block before placing it back on the bed.

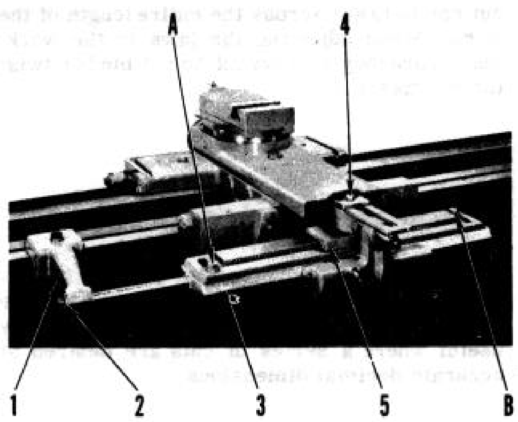
Fig. 16



Taper Attachment

The Regal telescopic taper attachment, Figure 17, is ruggedly constructed, accurately machined and simple to operate. Capacity on the 13" and 15" Regals is 3-1/2" maximum taper per foot and will turn 10" at one setting. Capacity on the 17" and 19" Regals is 3-1/2" maximum taper per foot and will turn 15" at one setting.

Fig. 17



When the carriage is brought into position for taper turning, the bed bracket (1) is locked on the bed ways. The slide rod draw bar is then locked by nut (2). The swivel guide bar (3) is adjusted to the desired taper by loosening nuts (A) and (B), adjusting to the proper taper and retightening nuts (A) and (B). This guide is graduated in inches on one end and degrees on the other.

With the taper bar clamp nut (4) loosened, the tool is moved into position and nut (4) relocked. When the carriage feed is engaged, the bed bracket and connecting rod hold the lower taper bar In a fixed position in relation to the bed and work. Movement of the carriage, slides gibbed block (5) along the taper bar.

The taper attachment bottom slide draw bar, in its locked position, prevents the cross slide from being moved. The compound rest dial is used in sizing for taper turning. For this reason the compound rest should be at the zero setting and square with the carriage. Avoid unnecessary overhang of this slide to prevent chatter.

Chasing Dial

The chasing dial, Figure 18, permits the operator to take a cut, back the tool out and return the carriage to the starting point, set the tool for the next but, and re-engage the half nut to pick up the same lead without stopping or reversing the spindle.

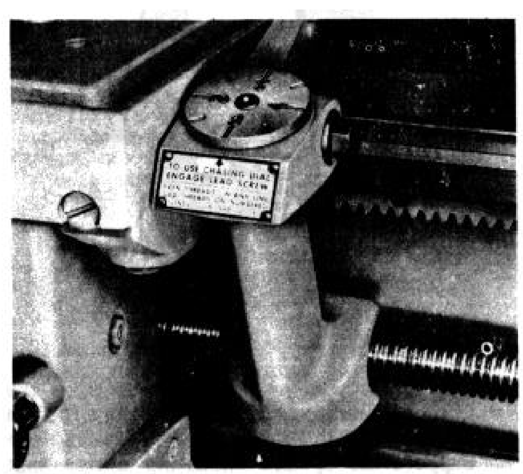


Fig. 18

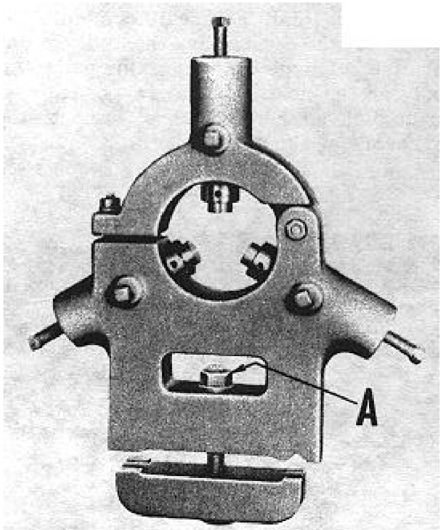
The chasing or thread indicating dial consists of a worm wheel, which runs in the leadscrew, and a shaft connected to an indicating dial. When chasing even numbered threads, the half-nuts may be engaged at any line on the dial, odd numbered threads at any numbered line and half-threads at any odd numbered line.

Steady Rest

The steady rest, Figure 19, provides a fixed support between the head and tailstock for long round work while it is being turned. The rest is also used to support one end of the workpiece when operations such as boring are performed.

Steady rests are clamped in position on the bed by clamp nut (A). Proper position is generally in the center of long workpieces for turning, and on one end for boring. Two types of jaws are generally used on steady rests, plain or bronze type and roller jaws -- adjustment of these jaws should be made in the following manner. Always adjust the bottom jaws first.

Fig. 19

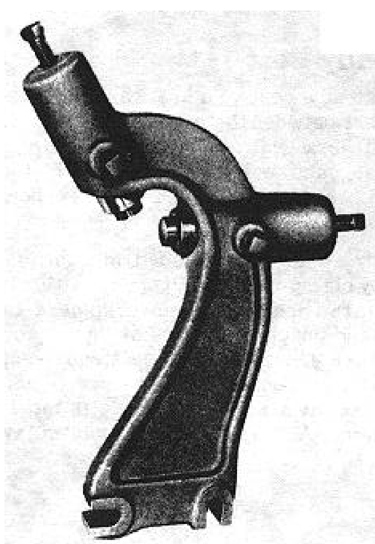


These jaws should be positioned to keep the workpiece running true. The top jaw is then brought into light contact with the workpiece to support the upward thrusting action that occurs when the work is revolving. Be sure to keep oil on the contact area between the jaw tips and the work. Scoring is usually caused by the top jaw being too tightly clamped and lack of oil. Chatter is generally caused by the top jaw being too loose.

Follow Rests

The follow rest, Figure 20, is used to support between-center work against the forces of the cut being taken. It is bolted to the carriage and moves with it. This rest is

Fig. 20



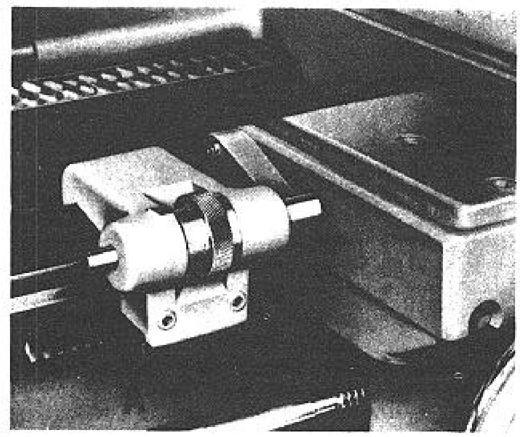
very useful in turning long small diameter work and is a necessity when chasing threads on long screws. Without a follow rest the screw would be inaccurate, due to its springing away from the tool.

The follow rest is adjusted to the workpiece in the following manner. First, the cut is started and turned approximately 3". The jaws are then set to the turned diameter after which the cut can be taken across the entire length of the work. When adjusting the jaws to the work, make sure they support but do not bind or twist the workpiece.

Micrometer Carry Stop

The micrometer carriage stop, Figure 21, permits the operator to bring the carriage to the same position accurately on the bed. It is very useful where a series of cuts are desired at accurate decimal dimensions.

Fig. 21



The stop is clamped on the front bed way with nut (A). The design of the clamp prevents marring the hardened way while in use. A micrometer screw with hardened ends is turned by a large knurled collar which has been graduated for direct reading in thousandths of an inch. The carriage is brought up against the end of the stop by hand. Never run the carriage against the stop with power feed.

MAINTENANCE AND ADJUSTMENTS

The following general rules will keep your machine in best running condition and prevent down time for maintenance and repair.

1. Keep general work area clean.
2. Do not remove guards, - they are put on for safety and to keep dirt out of your lathe.
3. Make sure the tailstock has been clamped before turning between centers.
4. Don't use your lathe for a work bench. Lathes have been wrecked by a wrench lying on the ways between the carriage and head.
5. Always keep the spindle nose, face plate, chucks and centers clean and dry. Dirt and grit between a face plate and the spindle nose may cause run out.
6. Headstock and tailstock spindle holes as well as centers must be free from dirt before inserting centers.
7. Tighten spindle lock nut securely before starting lathe.
8. Use lubricant on dead tailstock centers.
9. Keep tool tight in tool holder.
10. Before chasing threads, wipe leadscrew free from dirt and lightly oil.
11. Check direction of feed before engaging the tool to the workpiece.
12. Always disconnect the power before leaving lathe.

Be sure your lathe is properly lubricated at all times and oil reservoirs are filled. See section on "Lubrication".

From time to time your lathe may need minor adjustments. Read the proper section for making these adjustments before performing adjusting operations. Never tear a machine down leaving a box of parts for a service man. He is experienced in trouble shooting and chances are he will save you time and money by doing this work himself. Often corrections can be made without tearing machine down.

TROUBLE SHOOTING CHART

TROUBLE	PROBABLE CAUSE	CORRECTION
Vibration	Loose leveling screws	Set all screws so they bear evenly on leveling plates.
	Torn or mismatched vee belts	Replace vee belts with matched set.
	Work or chuck out of balance operating at high spindle speeds	Balance chuck or reduce spindle speed.
	Motor out of balance	Contact local representative of motor manufacturer.
Chatter	Tool bit improperly ground or not on center	Regrind tool bit or adjust tool holder so that area of contact between tool bit and work is decreased.
	Tool overhang too great	Keep point of tool bit as close as possible to tool holder.
	Using improper surface feet	Reduce or increase spindle speed.
	Feed rate too high or too low	Reduce or increase feed.
	Gibs of cross slide or compound rest loose	Adjust gibs.
	Spindle bearings worn	Adjust spindle bearings

continued on next page

TROUBLE SHOOTING CHART (Continued)

TROUBLE	PROBABLE CAUSE	CORRECTION
Chatter (cont'd)	Work improperly supported	Adjust tailstock center. Use steady rest or follow rest on long slender shafts.
	Vibration	See "Vibration" trouble above.
	Spindle bearing loose	Adjust spindle bearings.
Work not turned straight	Headstock and tailstock centers not aligned	Align tailstock center.
	Work improperly supported	Use steady rest or follow rest. Reduce overhang from chuck.
	Bed not level	Relevel bed, using precision level.
	Tool not on center when using taper attachment	Put tool on center.
Work out of round	Work loose between centers or centers are excessively worn - work centers out of round	Adjust tailstock center. Regrind centers. Lap work centers.
	Loose headstock spindle bearings	Adjust headstock spindle bearings
Cross slide or compound rest movement does not coincide with dial movement of respective adjusting screw.	Gib setting too tight or too loose	Adjust gibs.
	Work is too long and slender	Use steady rest or follow rest.

Headstock Spindle Bearing Adjustment (Fig. 22)

When adjusting the spindle bearing, use small face plate on spindle nose. Remember that a slight drag should be felt when the bearing is adjusted correctly.

1. Remove the head cover.
2. Locate the two hex head set screws (1) on the center bearing nut. Loosen.
3. Tighten (or loosen) the center bearing nut (2). This is the adjusting nut.
4. Tighten the two hex head set screws (1) on the adjusting nut.
5. Replace the head cover and bolt firmly to prevent oil leakage.

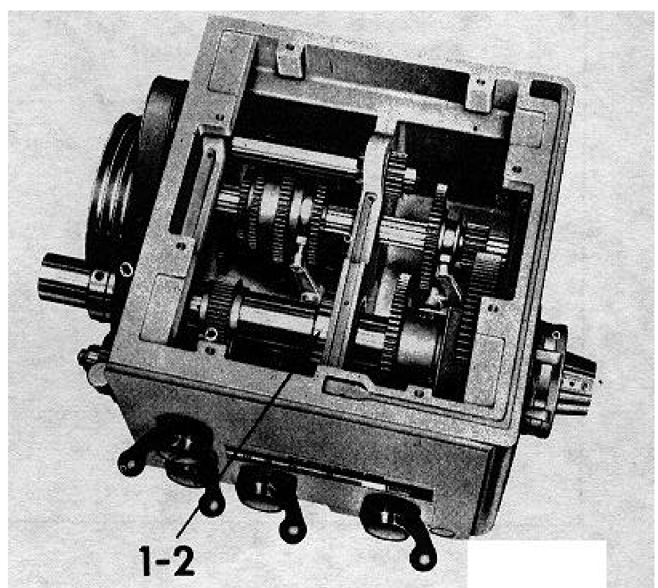


Fig. 22

Servo-Shift Pressure Adjustment

To adjust the servo-shift hydraulic pressure, remove the headstock cover. Remove the small pipe plug in the front hydraulic cylinder, opposite the pressure line. Insert a pressure gauge as shown on page 64. The gauge should be graduated to about 500 P.S.I.

Start the hydraulic pump. Loosen the lock nut on the pressure adjusting valve (page 64) and turn the set screw clockwise to decrease pressure, counterclockwise to increase pressure. The operating pressure is approximately 200 P.S.I. Retighten the locknut.

Best Tension Adjustment (fig. 23)

The motor is mounted on a hinged plate in the back of the headstock leg. The hinged plate is adjusted by means of turnbuckle (A) in the leg to regulate the tension on the V-belts. Belts should have approximately 1/2" spring to provide enough tension to take the cuts without slipping. Too much tension on the belts will cause a strain on the motor and drive shaft bearings, causing excessive wear. Oil on the belts will cause slippage.

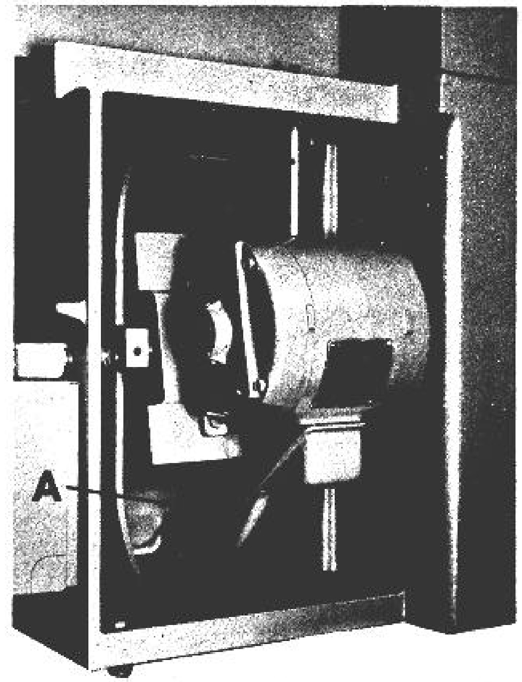


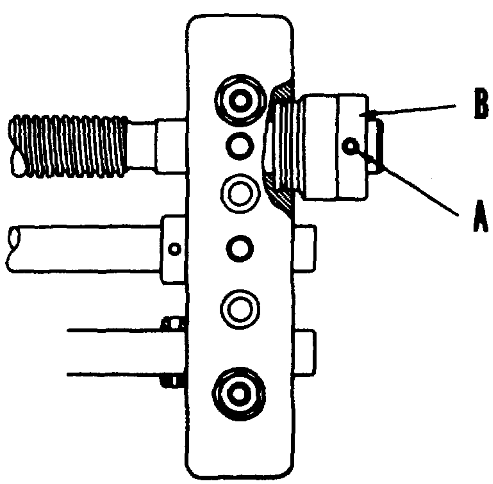
Fig. 23

Leadscrew Adjustment (fig. 24)

The leadscrew has been properly adjusted before the machine has been shipped. With normal care, no adjustment will be necessary for many years.

NOTE: The leadscrew is used only for chasing on Regal lathes. Under all other operations, it should be disengaged. Excessive wear to the leadscrew and half nut takes place when the leadscrew Is not cleaned before chasing when it has not been used for some time. Always wipe leadscrew with an oily rag to remove dirt and grit under these conditions.

Fig. 24



For Adjustment:

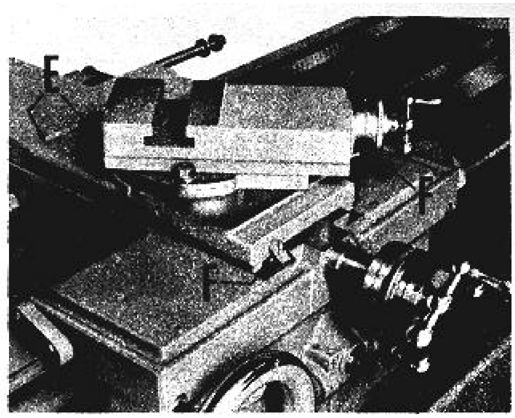
1. Loosen set screw (A).
2. Tighten the adjusting nut (B) until there is no end play in the leadscrew.
3. Retighten set screw (A).

Cross Slide and Tope Slide Gib Adjustment

If the gibs on the cross slide and top slide are loose, the compound rest will wobble slightly causing inaccurate work. To adjust these gibe follow this procedure:

1. Loosen the gib screw (E) at the small end of the gib.
2. Tighten adjusting screw (F) at the large end of the gib, until a slight drag is felt when the slide is moved. Re-tighten screw (E).

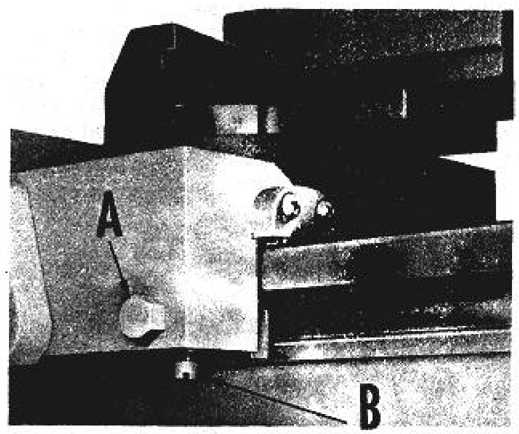
Fig. 25



Carriage Rear Gib Adjustment

The carriage rear gib to adjusted by moving it vertically upward. To adjust the gib, loosen two hex screws (A) which hold the gib against the rear wall of the carriage. Tighten the two screws (B) that move the gib vertically upwards until a slight drag is felt as the carriage is moved along the bed. Tighten the hex screws.

Fig. 26

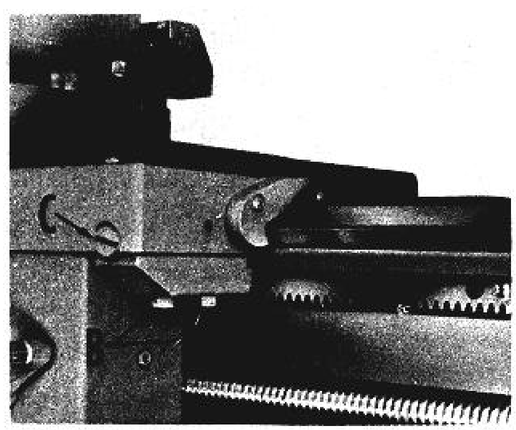


Carriage Front Gib Adjustment

There are two gibs located at both sides of the carriage front. Screws (B) hold the gib bracket to the carriage from underneath. The gib adjusting crews (C) are found at the front edge of the carriage. When adjusting the front carriage gibs:

1. Loosen two gib bracket screws (B).
2. Adjust gib adjusting screws until there is a slight drag when the carriage is moved along the bed.
3. Repeat with the other front gib.

Fig. 27



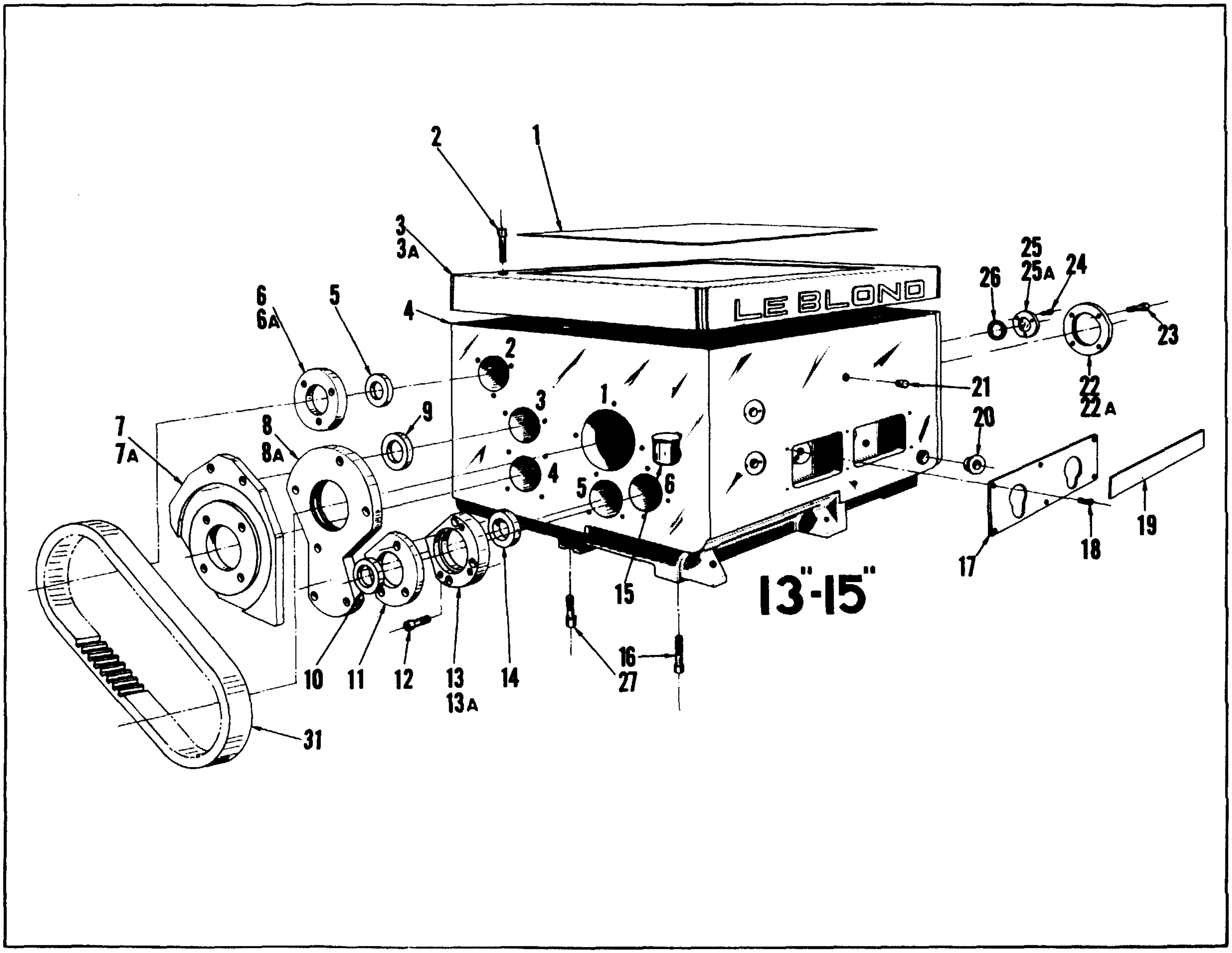
INSTRUCTIONS FOR ORDERING PARTS

When ordering repair parts, the following information must be given for best service:

1. Serial number of the lathe. This can be found on the front flat at the tailstock end of the bed.
2. The name of the part, the key number of the part, and the page number on which the part appears in the block.

In the Repair Parts Section the 13" Regal is taken as the basic machine in working up the lists. Therefore, some parts on Regals of other sizes will not be identical with the illustrations.

REPAIR PARTS INDEX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13"-15"

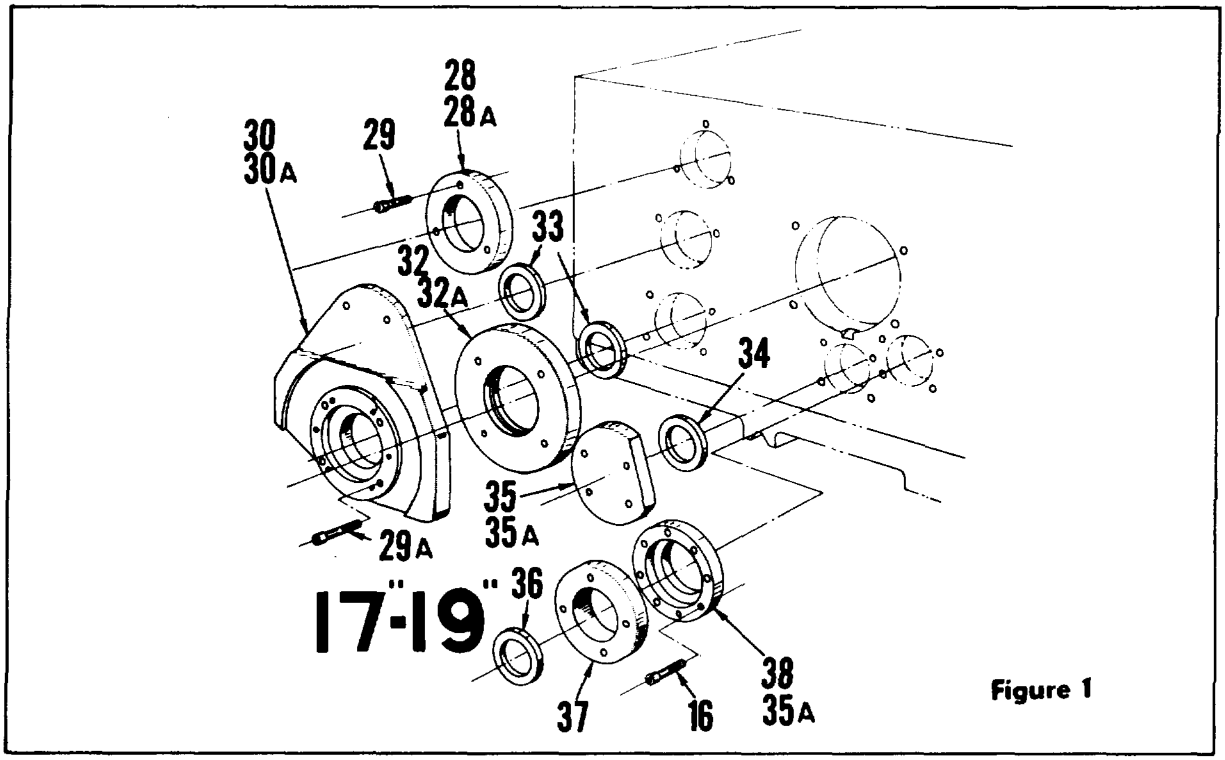
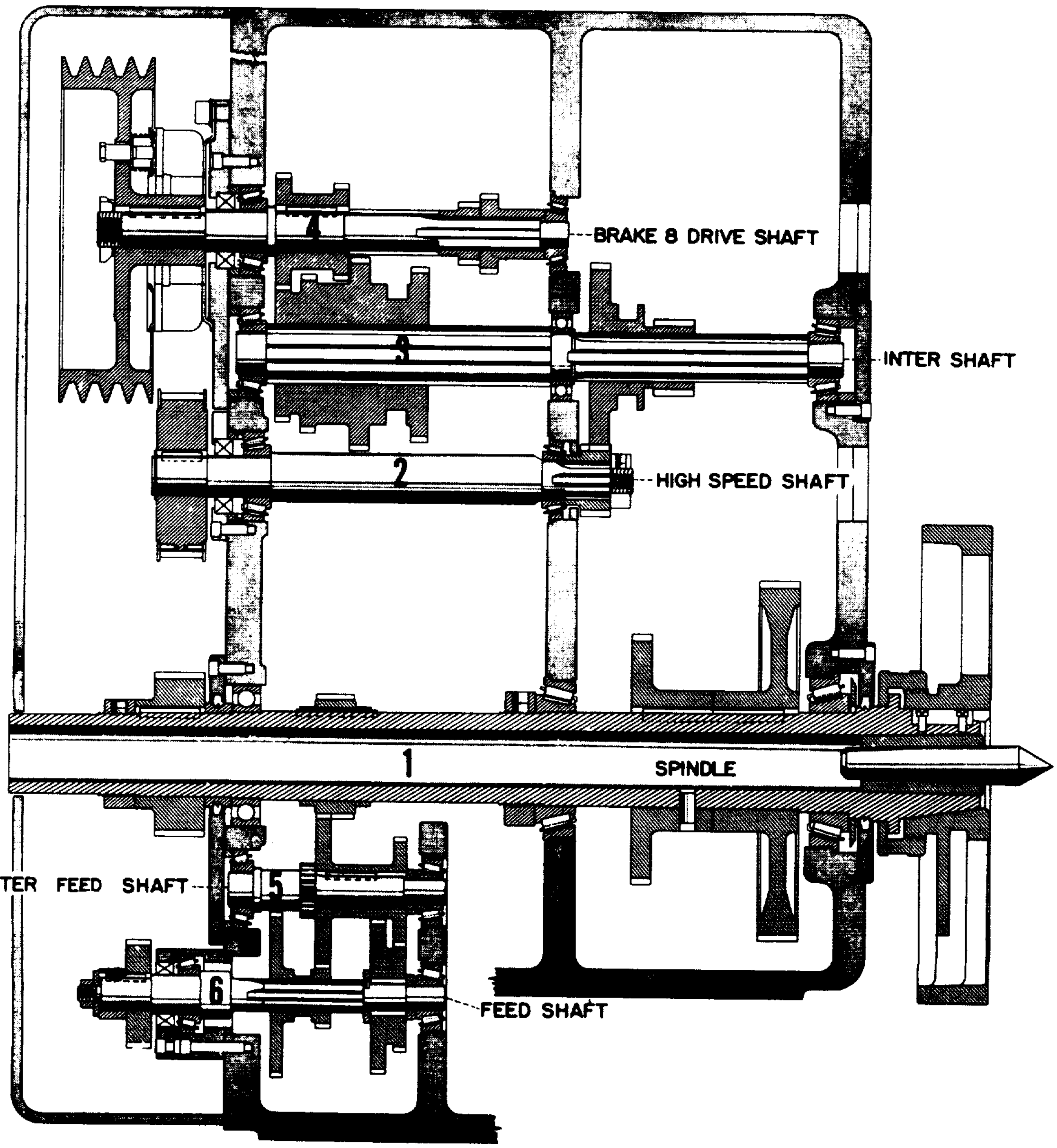


Figure 1

HEADSTOCK CASTING

Key No.	Part Name	Qty.	Key No.	Part Name	Qty.
1-1	Mat, Head Cover	1	1-21	Plug, C.I.	1
1-2	Screw, Socket Head	8	1-22	Flange, Spindle Front	11
1-3	Cover, Head Top	1	1-22A	Gasket, Spindle Front Flange	1
1-3A	Gasket, Head Cover	1	1-23	Screw, Socket Head	4
1-4	Head (Specify 13", 15", 17" or 19")	1	1-24	Screw, Socket Head	3
1-5	Collar, High Speed Shaft Matching	1	1-25	Plug, Inter, Shaft Front	1
1-6	Flange, High Speed Shaft Rear	1	1-25A	Gasket, Inter. Shaft Front	1
1-6A	Gasket, High Speed Shaft Flange	1	1-26	Spacer, Inter. Shaft	1
1-7	Flange, Drive Shaft	1	1-27	Screw	2
1-7A	Gasket, Drive Shaft Flange	1	1-28	Flange, High Speed Shaft Rear	1
1-8	Flange, Spindle Rear	1	1-28A	Gasket, High Speed Shaft Flange	1
1-8A	Gasket, Spindle Rear Flange	1	1-29	Screw, Socket Head	2
1-9	Collar, Drive Shaft Matching	2	1-30	Flange, Drive Shaft	1
1-10	Seal, Victoprene Oil	1	1-30A	Gasket, Drive Shaft	1
1-11	Cap, Fd. Shaft Brg. Sleeve	1	1-31	Belt, Timing (Specify 13", 15", 17",) or 19")	1
1-12	Screw, Socket Head	3			
1-13	Sleeve, Fd. Shaft Brg	1	1-32	Flange, Rear Spindle	1
1-13A	Gasket, Fd. Shaft Brg. Sleeve	1	1-32A	Gasket, Spindle Rear Flange	1
1-14	Collar, Interfd. Shaft Matching	1	1-33	Collar, Drive Shaft Matching	2
1-15	Oiler	1	1-34	Collar, Inter. Feed Shaft Match	1
1-16	Screw	2	1-35	Cover, Inter. Feed Shaft Brg.	1
1-17	Cover, Head Front.	1	1-35A	Gasket, Feed Shaft Sleeve	3
1-18	Screw, Button Hd. Soc. Type	6	1-36	Seal, Victoprene Oil	1
1-19	Plate, Spindle Speed (Specify Speed) Range)	1	1-37	Cap, Feed Shaft Brg. Sleeve	1
			1-38	Sleeve, Feed Shaft Bearing	1
1-20	Window Unit, Bijur Oil Level Type	1			

IMPORTANT-Include serial number of your lathe when ordering repair parts.



HEADSTOCK ROLLOUT

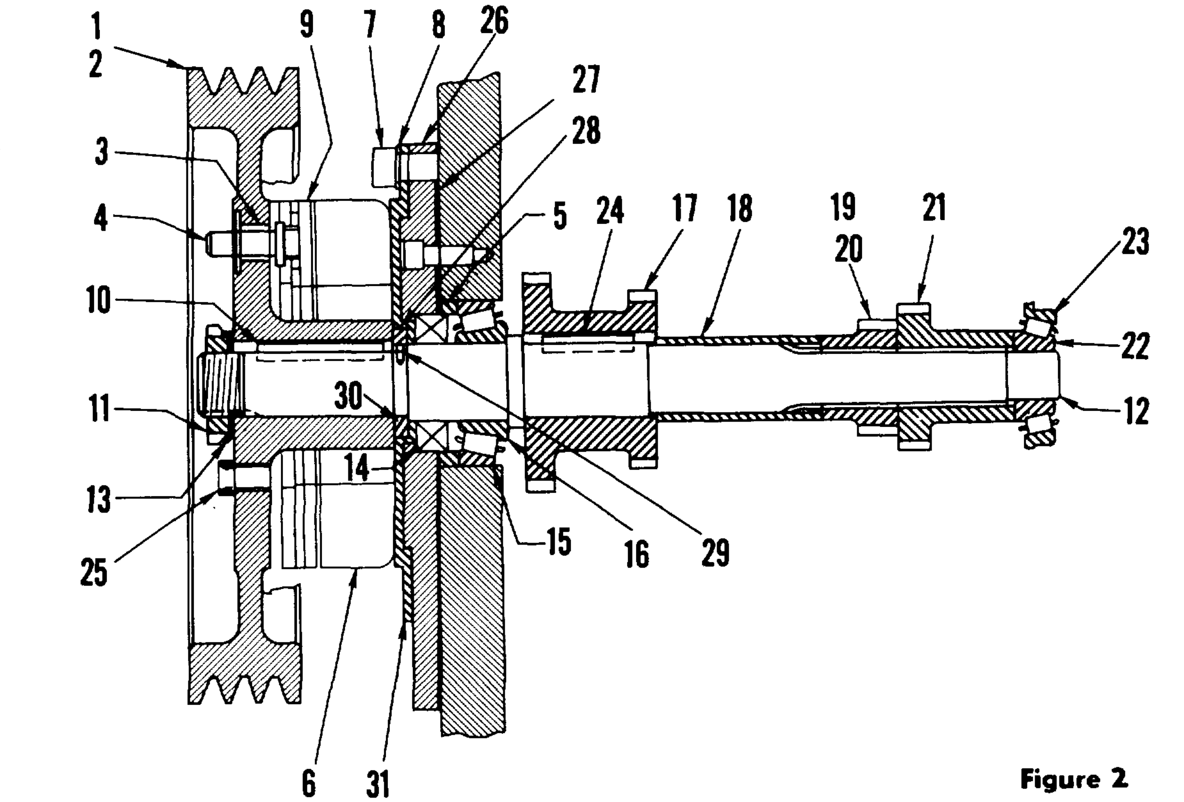


Figure 2

BRAKE & DRIVE SHAFT

Key No.	Part Name	Qty.	Key No.	Part Name	Qty.
2-1	Pulley, Drive	1	2-16	Cone, Timken Bearing #2	1
2-2	Brake, Dyna-Torque		2-17	Gear, Drive Shaft Large	1
	Electric, Outside Mounting	1	2-18	Collar, Drive Shaft Spacing	1
2-3	Oilite Bushing	3	2-19	Gear, Drive Shaft Small	1
2-4	Dyna-Torque Accessory Group		2-20	Key, Flat (not used on 13" - 15")	1
	Including Drive Pins	1	2-21	Gear, Drive Shaft Inter	1
2-5	Spacer, Bearing	1	2-22	Cone, Timken Bearing #2	1
2-6	Magnet, 90 Volt	1	2-23	Cup, Timken Bearing #2	1
2-7	Screw	4	2-24	Key, Flat	1
2-8	Washer	4	2-25	Screw	3
2-9	Armature	1	2-26	Flange	1
2-10	Key, Flat	1	2-27	Gasket	1
2-11	Nut, Lock	1	2-28	Collar	1
2-12	Shaft, Drive	1	2-29	Pin	1
2-13	Washer, Lock	1	2-30	Sleeve (17" & 19" Only)	1
2-14	Seal, Victoprene Oil	1	2-31	Mounting Plate	1
2-15	Cup, Timken Bearing #2	1			

IMPORTANT-Include serial number of your lathe when ordering repair parts.

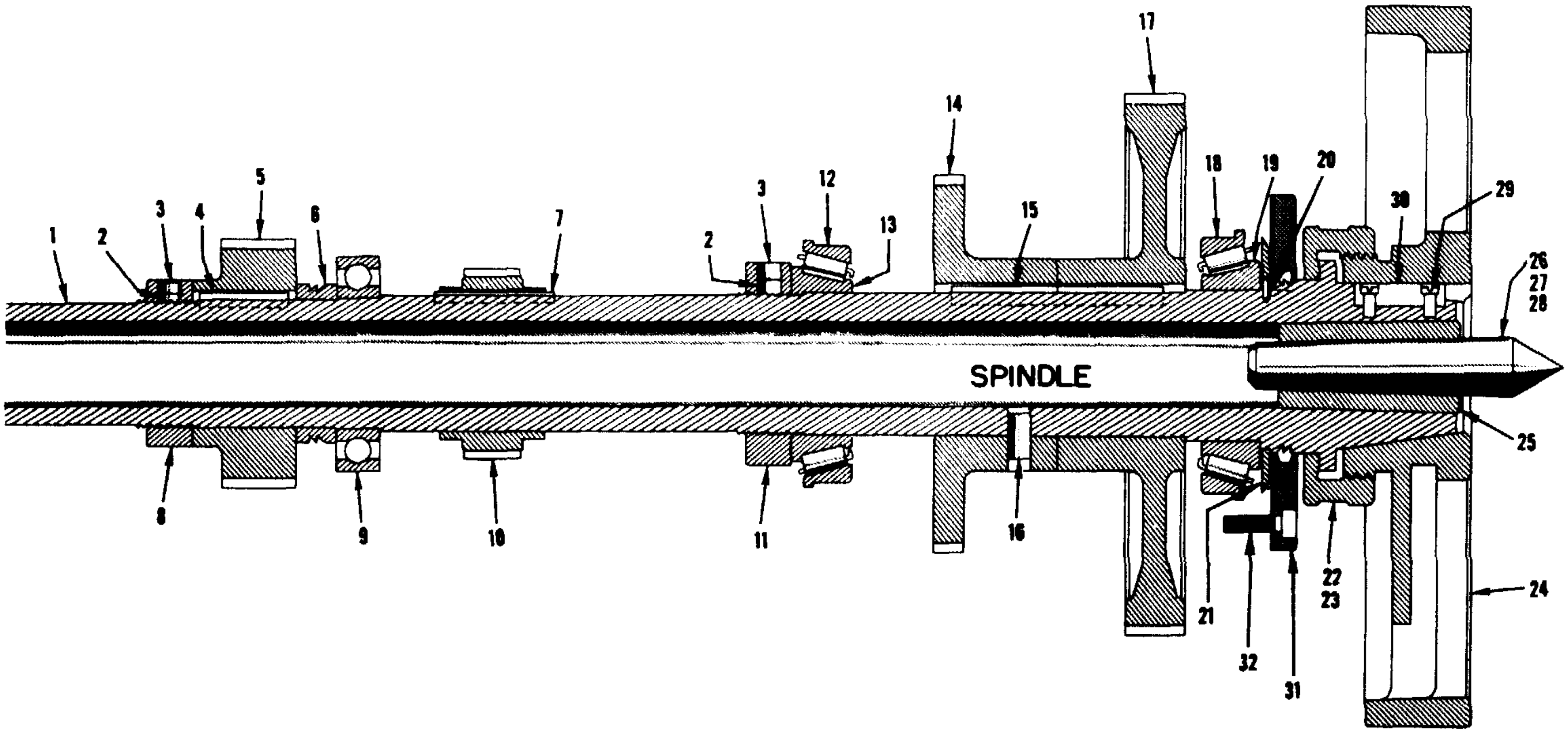


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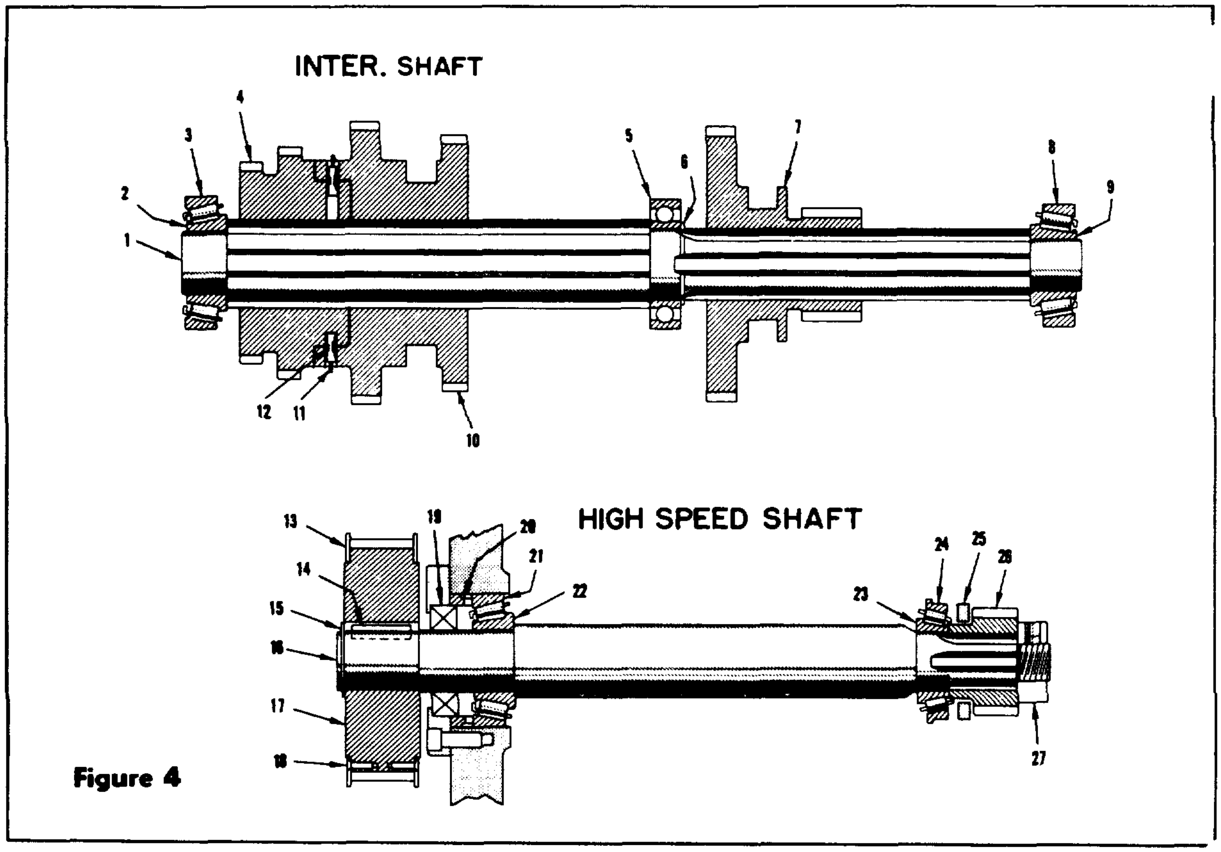
FIGURE 3

SPINDLE

Key No.	Part Name	Qty.	Key No.	Part Name	Qty.
3-1	Spindle	1	3-21	Slinger Spindle Oil	1
3-2	Plug	2	3-22	Nut, Draw	1
3-3	Screw, Set	2	3-23	Wrench, Spanner (for Draw Nut)	1
3-4	Key, Flat	1	3-24	Plate, Small Face	1
3-5	Pulley, High Speed Spindle	1		Plate, Large Face 12” Diam	1
3-6	Collar, Spindle Thrust	1		14” Diam	1
3-7	Key, Flat	1		Plate, Large Chuck 7” Diam	1
3-8	Nut, Lock	1		Plate, Extra Large Chuck 10-1/4” Diam.	1
3-9	Bearing, MRC Ball	1		Plate, Large Chuck 8” Diam	1
3-10	Gear, Spindle Feed Reverse	1		Plate, Medium Chuck 6” Diam	1
3-11	Nut, Lock	1		Plate, Small Face	1
3-12	Cup, Timken Bearing #3	1		Plate, Large Face 16” Diam	1
3-13	Cone, Timken Bearing #3	1		18” Diam	1
3-14	Gear, Spindle	1		Plate, Small Chuck 6” Diam	1
3-15	Key, Flat	1		Plate, Medium Chuck 7” Diam	1
3-16	Pin, Straight	1		Plate, Extra Large Chuck 11-1/2” Diam.	1
3-17	Gear, Spindle Face	1		13-1/4” Diam.	1
3-18	Cup, Timken Bearing #3	1		Plate, Large Chuck 8” Diam	1
3-19	Cone, Timken Bearing #3	1		9” Diam	1
3-20	Pin, Straight (not used on 17” - 19”)	1	3-25	Bush, Spindle Center	1
			3-26	Center, Spindle	1
			3-27	Center, Spindle Half	1
			3-28	Rod, Center Knockout	1
			3-29	Screw, Filister Head	2
			3-30	Key, Spindle Nose	1
			3-31	Flange	1
			3-32	Screw	4

IMPORTANT-Include serial number of your lathe when ordering repair parts.



INTERMEDIATE SHAFT-HIGH SPEED SHAFT

Key No.	Part Name	Qty.	Key No.	Part Name	Qty.
4-1	Shaft, Intermediate	1	4-15	Ring, Truarc	1
4-2	Cone, Timken Bearing #2	1	4-16	Shaft, High Speed	1
4-3	Cup, Timken Bearing #2	1	4-17	Pulley, High Speed Shaft	1
4-4	Gear, Intermediate Shaft Cluster	1	4-18	Screw, Flat Head Socket	8
4-5	Bearing, MRC Ball	1	4-19	Seal, Victoprene Oil.	I
4-6	Ring, Truarc	1	4-20	Collar, High Speed Shaft Matching	1
4-7	Gear, Intermediate	1	4-21	Cup, Timken Bearing #2	1
4-8	Cup, Timken Bearing #2	1	4-22	Cone, Timken Bearing #2	1
4-9	Cone, Timken Bearing #2	1	4-23	Cone, Timken Bearing #2	1
4-10	Gear	1	4-24	Cup, Timken Bearing #2	1
4-11	Ring, Snap	1	4-25	Retainer, High Speed Shaft Oil	I
4-12	Pin	2	4-26	Pinion, High Speed Shaft	I
4-13	Flange, High Speed Shaft Pulley	2	4-27	Nut, Lock	1
4-14	Key, Flat	1			

IMPORTANT-Include serial number of your lathe when ordering repair parts.

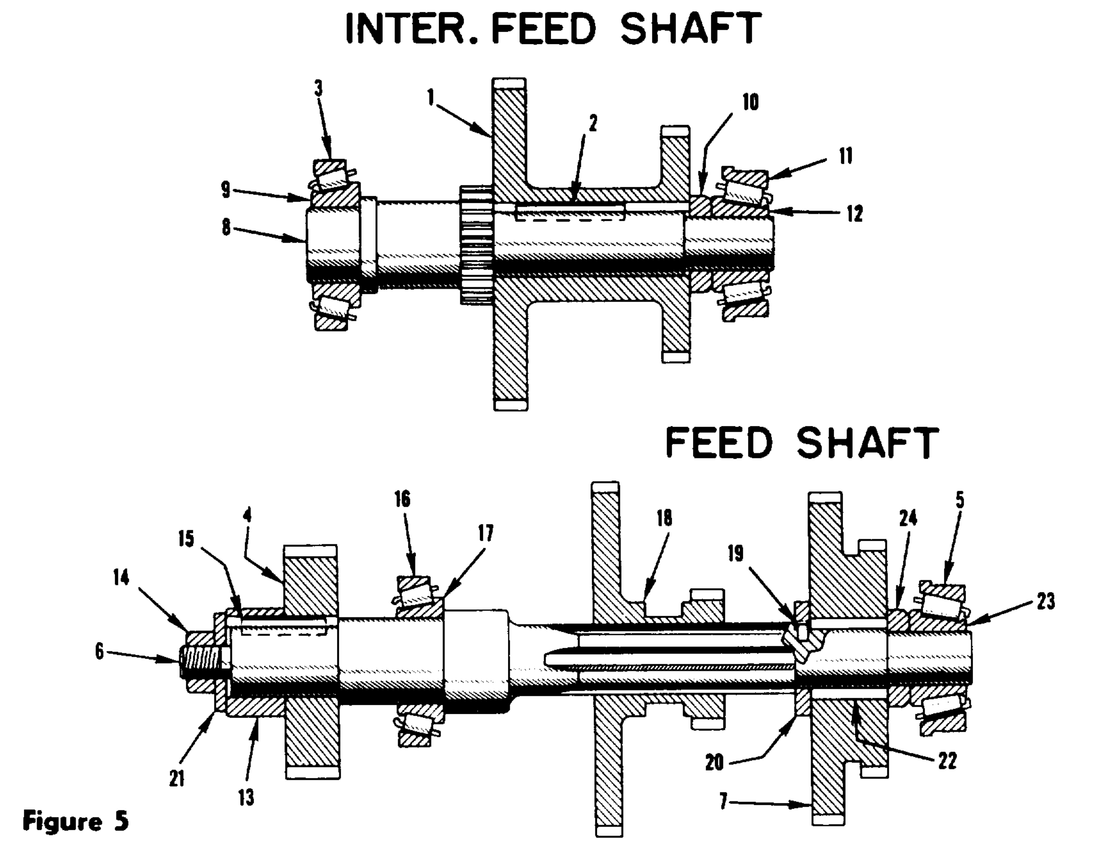


Figure 5

INTERMEDIATE FEED SHAFT- FEED SHAFT

Key No.	Part Name	Qty	Key No.	Part Name	Qty
5-1	Gear, Intermediate Feed Shaft	1	5-13	Collar, Feed Shaft Change Gear.........	1
5-2	Key, Flat	1	5-14	Nut, Hex	1
5-3	Cup, Timken Bearing #2	1	5-15	Key, Flat..	1
5-4	Gear, Feed Change.............................	1	5-16	Cup, Timken Bearing #2......................	1
5-5	Cup, Timken Bearing #2.......................	1	5-17	Cone, Timken Bearing #2	1
5-6	Shaft, Feed	1	5-18	Gear, Feed Shaft Sliding	1
5-7	Gear, Feed Reverse Idler	1	5-19	Pin, Straight.......................................	1
5-8	Shaft, Intermediate Feed......................	1	5-20	Collar, Feed Reverse Idler Gear	1
5-9	Cone, Timken Bearing #2....................	1		Collar, Thrust.....................................	1
5-10	Collar, Spacing...................................	1	5-21	Washer, Spec....................................	1
	Collar, Thrust......................................	1	5-22	Bush, Feed Reverse Idler Gear	1
5-11	Cup, Timken Bearing #2.......................	1	5-23	Cone, Timken Bearing #2	1
5-12	Cone, Timken Bearing #2....................	1	5-24	Collar, Spacing..................................	1

IMPORTANT-Include serial number of your lathe when ordering repair parts.

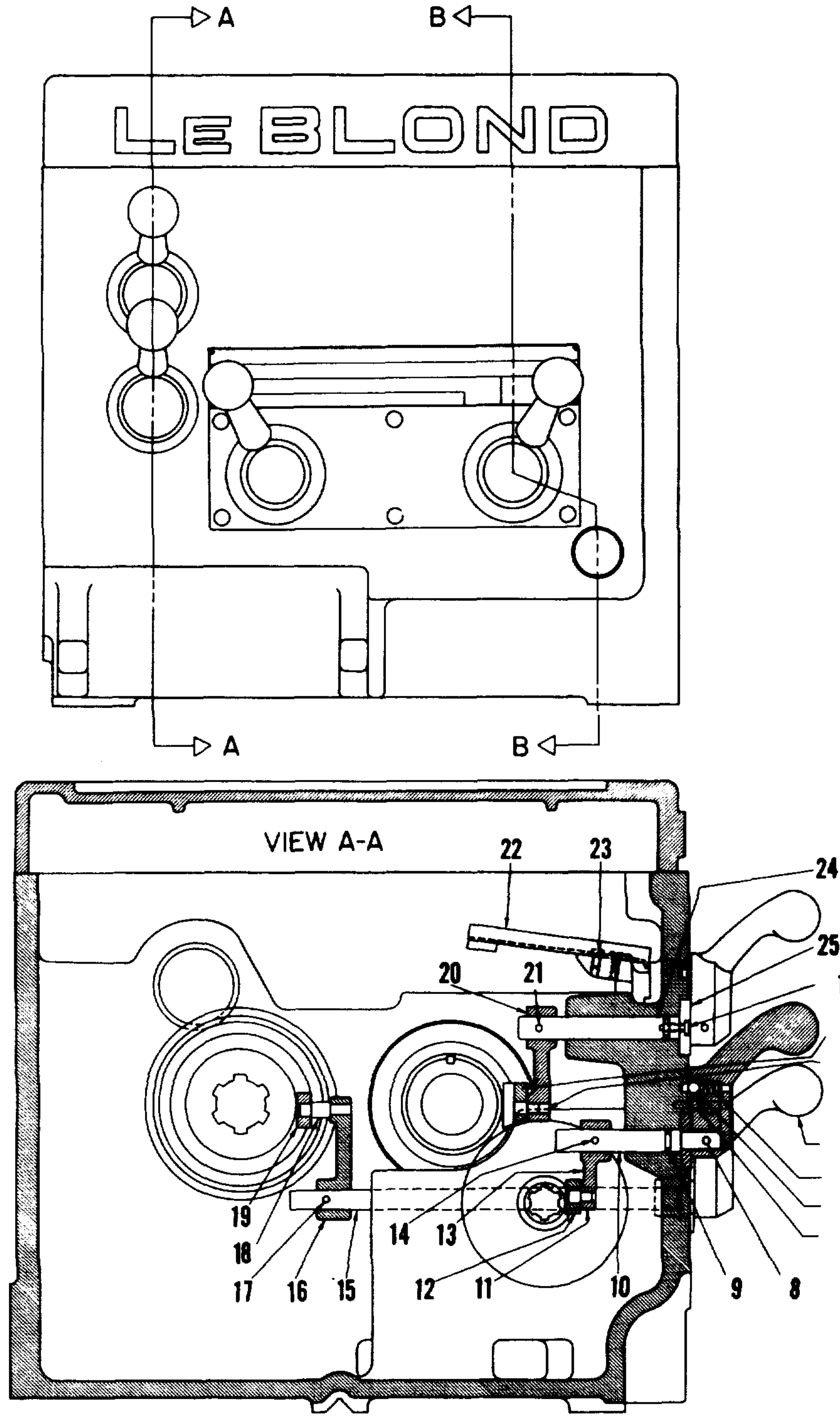

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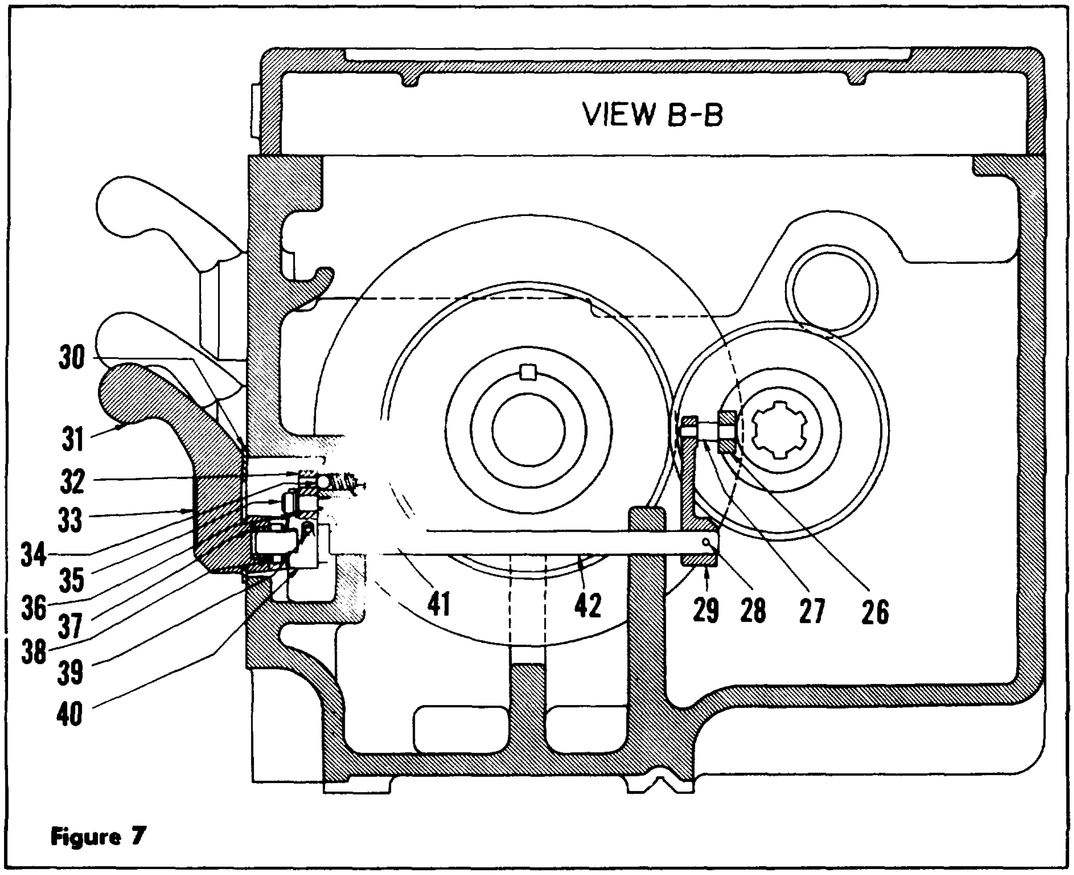
Figure 6



HEADSTOCK SHIFTER SECTIONS

Key No.	Part Name	Qty.	Key No.	Part Name	Qty.
6-1	Screw, Phillips Head...........................	4	6-22	Scoop, Face Gear Oil..........................	1
6-2	Shoe, Shifter......................................	1	6-23	Screw, Machine..................................	2
6-3	Pin, Shoulder.....................................	1	6-24	Shaft, Fd. Rev. Gear Shifter................	1
6-4	Handle, Shifter...................................	2	6-25	Collar, Shifter Retainer.......................	1
6-5	Spring, Detent...................................	2	7-26	Shoe, Shifter Lever.............................	1
6-6	Ball..	2	7-27	Pin, Shifter..	1
6-7	Pin..	.4	7-28	Pin, Taper Draw.................................	1
6-8	Pin, Taper...	2	7-29	Lever, Shifter.....................................	1
6-9	Ring, "O"...	2	7-30	Cover, Head Front..............................	1
6-10	Shaft, Feed Comp. Shifter..................	1	7-31	Handle, Shifter....................................	2
6-11	Pin, Shoulder.....................................	1	7-32	Screw, Set..	4
6-12	Shoe, Shifter Lever............................	1	7-33	Plate, Shift Handle..............................	2
6-13	Lever, Shifter.....................................	1	7-34	Ball..	2
6-14	Pin, Taper...	1	7-35	Screw, Hex. Soc. Shoulder..................	2
6-15	Shaft, Inter. Shaft Slid. Cluster............		7-36	Washer, Shoulder Scr.........................	2
	Gear Shifter.......................................	1	7-37	Collar...	2
6-16	Lever, Shifter.....................................	1	7-38	Pin...	2
6-17	Pin, Taper Draw.................................	1	7-39	Pin, Tape...	2
6-18	Pin, Shifter..	1	7-40	Yoke, Shift Retainer...........................	2
6-19	Shoe, Shifter Lever............................	1	7-41	Spring, Detent....................................	2
6-20	Lever, Shifter.....................................	1	7-42	Shaft, Inter. Shaft Slid. Back Gear	
6-21	Pin, Taper...	1		Shift..	1

IMPORTANT-Include serial number of your lathe when ordering repair parts.

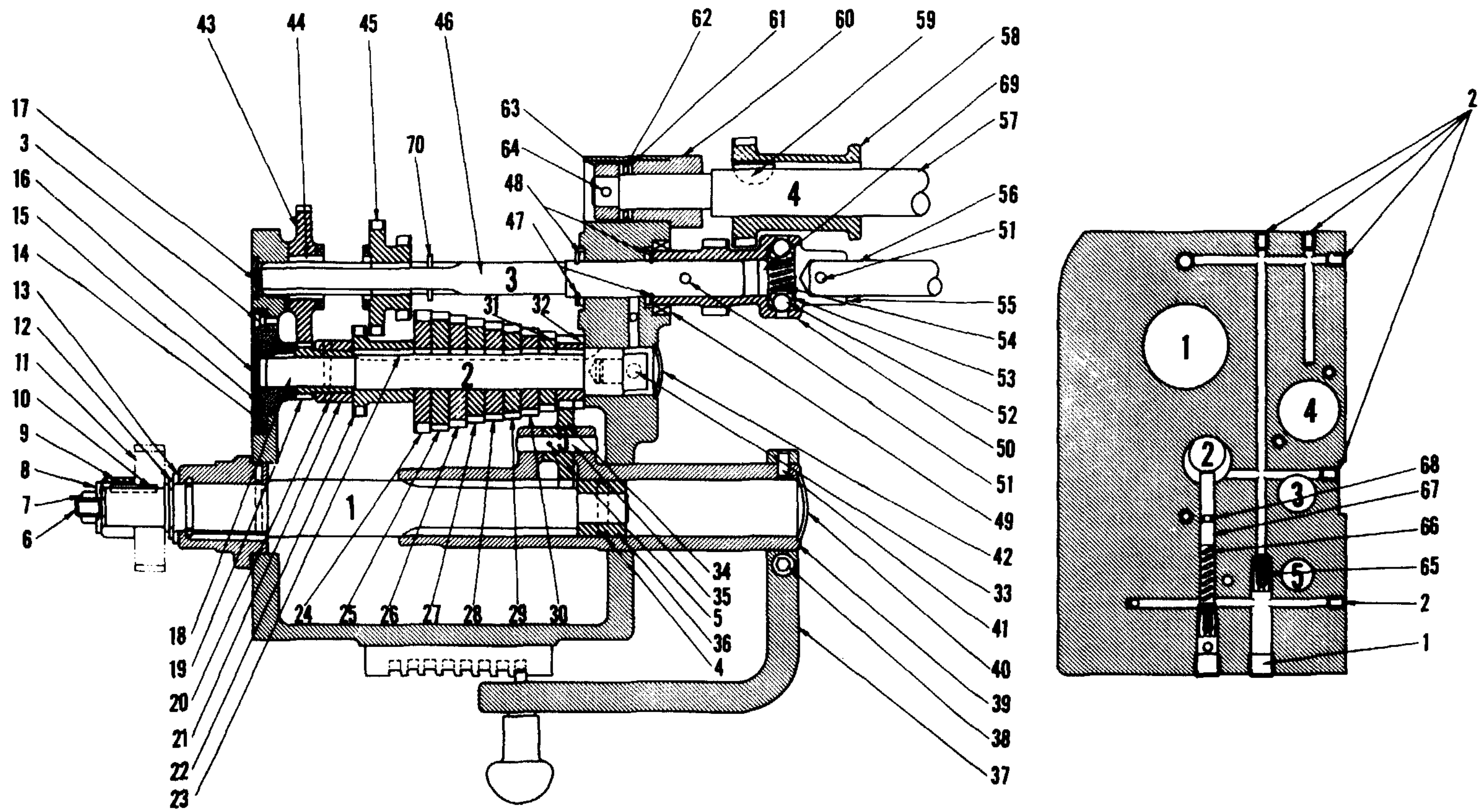

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Figure 8

QUICK CHANGE BOX

Feed Seat - Feed Rod - leadscrew Intermediate Shaft - Cone Shaft

Key No.	Part Name	Qty.	Key No.	Part Name	Qty
8-1	Pipe Plug...	4	8-36	Drive Gear Bushing	1
8-2	Pipe Plug...	6	8-37	Yoke Shifter Arm	1
8-3	Screw..	3	8-38	Screw	1
8-4	Taper Pin	1	8-39	Cylinder Yoke	1
8-5	Taper Pin	2	8-40	Expansion Plug..................................	1
8-6	Drive Gear Shaft	1	8-41	Pin..	1
8-7	Box Nut	1	8-42	Expansion Plug..................................	1
8-8	Washer	1	8-43	Clutch Gear	1
8-9	Feed Gear Collar.................................	1	8-44	Clutch Gear Bushing...........................	1
8-10	Key...	1	8-45	Sliding Gear	1
8-11	Feed Gear...	1	8-46	Feed Shaft..	1
8-12	Snap Ring	1	8-47	Snap Ring..	2
8-13	Drive Shaft Collar................................	1	8-48	Collar..	2
8-14	Gasket..	1	8-49	Victoprene Oil Seal............................	1
8-15	Cone Shaft Bushing............................	1	8-50	Feed Rod Gear..................................	1
8-18	Expansion Plug	1	8-51	Taper Pin...	2
8-17	Plug...	1	8-52	Ball...	2
8-18	Cone Shaft	1	8-53	Feed Rod Plunger..............................	2
8-19	15T. -14P. Gear	1	8-54	Feed Rod Spring	1
8-30	Pin	1	8-55	Feed Drive Collar	1
8-21	Cone Shaft Collar................................	1	8-56	Feed Rod...	1
8-22	15T. - 9P. Gear	1	8-57	Lead Screw..	1
8-23	Cone Gear Key...................................	1	8-58	Lead Screw Pinion.............................	1
8-24	21T. - 9P. Gear	1	8-59	Woodruff Key	1
8-25	28T. Cone Gear..................................	1	8-80	Lead Screw Bushing	
8-28	28T. Cone Gear..................................	1	8-81	Bearing Race......................................	
8-27	24T. Cone Gear..................................	1	8-62	Bearing...	1
8-28	23T. Cone Gear..................................	1	8-63	Collar..	1
8-29	22T. Cone Gear	1	8-64	Taper Pin...	1
8-30	20T. Cone Gear..................................	1	8-85	Valve Assembly..................................	2
8-31	18T. Cone Gear..................................	1	8-66	Spring...	2
8-32	16T. Come Gear	1	8-87	Pump Piston	1
8-33	Cone Shaft Stud.................................	1	8-68	“O” Ring...	1
8-34	Tumbler Gear.....................................	1	8-89	Plug..	1
8-35	Tumbler Gear Shaft	1	8-91	Snap Ring..	1

IMPORTANT - Include serial number of your lathe when ordering repair parts.

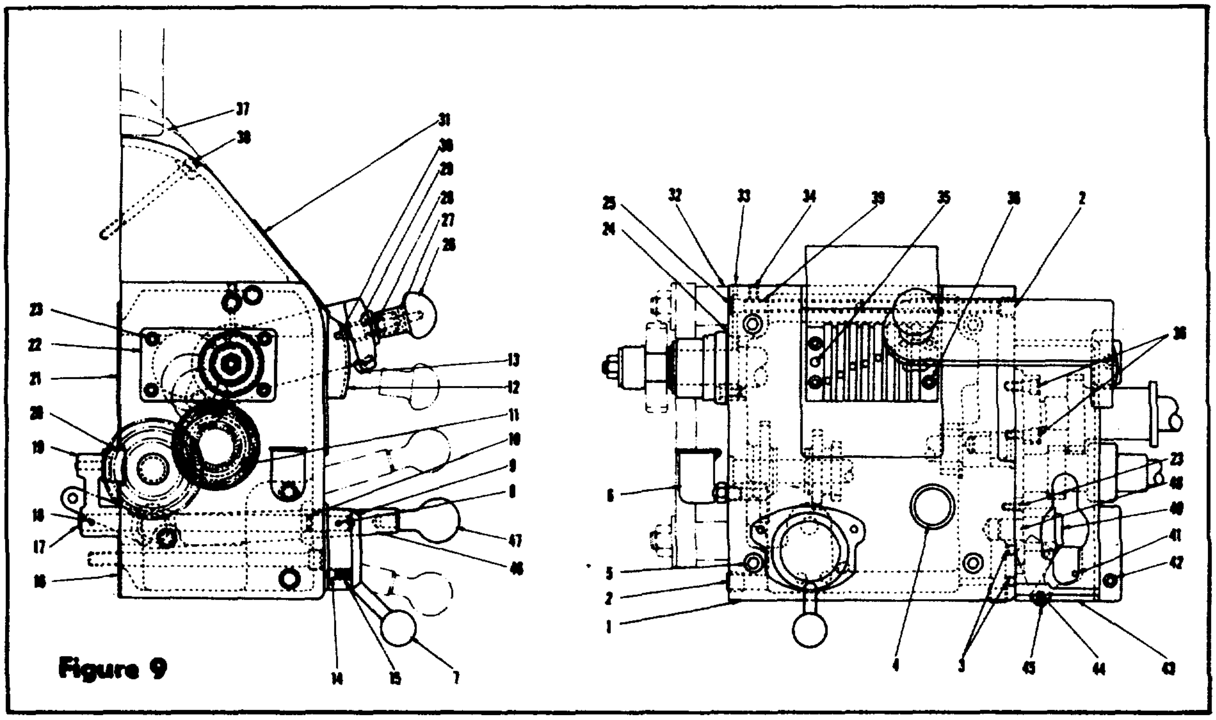
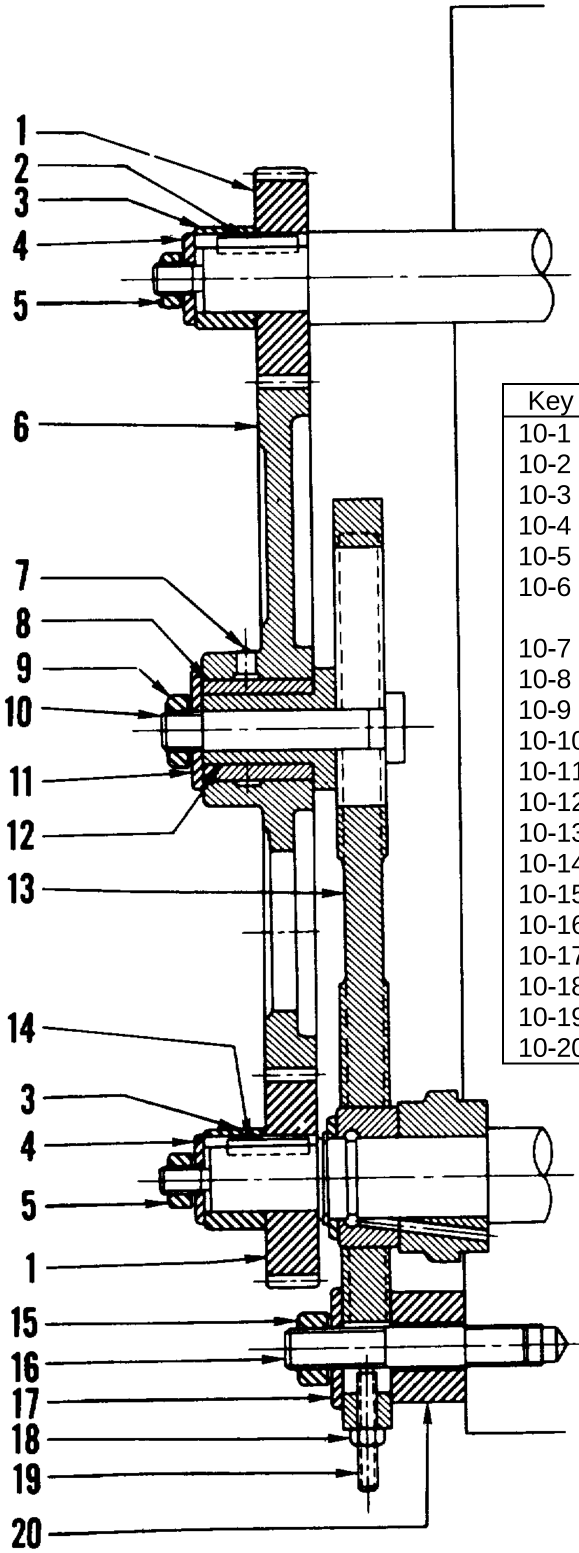


Figure 9

QUICK CHANGE BOX CASTING

Key No..	Part No	Qty.	Key No.	Part Name	Qty
9-1	Quick Change Box	1	9-25	Expansion Plug.................................	1
9- 2	Pipe Plug..	4	9-26	Yoke Shifter Knob.............................	1
9-3	Pipe Plug..	6	9-27	Taper Pin..	2
9-4	Oilsight Window	1	9-28	Spring...	1
9-5	Screw..	4	9-29	Knob Sleeve	1
9-6	Gts Oiler...	1	9-30	Knob Plunger.....................................	1
9-7	Knob	1	9-31	Index Plate	1
9-8	Pin	1	9-32	Quadrant Spacer	2
9-9	Hub	1	9-33	Pin...	2
9-10	"O" Ring	1	9-34	Set Screw	1
9-11	Screw	3	9-35	Pin...	2
9-12	Shifter Lock Plate	1	9-36	Screw	6
9-13	Button	1	9-37	Quick Change Box Top Cover	1
9-14	Steel Ball..	1	9-38	Screw	2
9-15	Spring	1	9-39	Oil Dist. Pipe	1
9-16	Gasket...	1	9-40	Shifter Stud.	1
9-17	Shifter Shaft	1	9-41	Pin...	1
9-18	Taper Pin	1	9-42	Screw	2
9-19	Shifter Lever	1	9-43	Slip Gear Cover.................................	1
9-20	Shifter Shoe	1	9-44	Binding Head Screw	1
9-21	Gasket...	1	9-45	Safety Latch	1
9-22	Quick Change Box Bushing................	1	9-46	Spindle Control Handle.......................	1
9-23	Screw..	6	9-47	Ball Handle..	1
9-24	Gasket...	1	9-48	Handle Detent Plate...........................	1

IMPORTANT-Include serial number of your lathe when ordering repair parts.



QUADRANT

Key No.	Part Name	Qty.
10-1	Gear, Feed Change......................	1
10-2	Key	1
10-3	Collar, Feed Shaft Change Gear ...	1
10-4	Washer, Spec	1
10-5	Nut, Hex.....................................	1
10-6	Gear, Quadrant 120 Teeth (Specify 12 of 14 Pitch).............	1
10-7	Oiler..	1
10-8	Bush, Oilite	1
10-9	Nut..	1
10-10	Bolt, Quadrant T-Slot	1
10-11	Washer	1
10-12	Bush, Quadrant Gear	1
10-13	Quadrant......................................	1
10-14	Key	1
10-15	Nut..	3
10-16	Stud	2
10-17	Washer	3
10-18	Nut..	1
10-19	Screw, Set	1
10-20	Spacer, Quadrant..........................	2

Figure 10

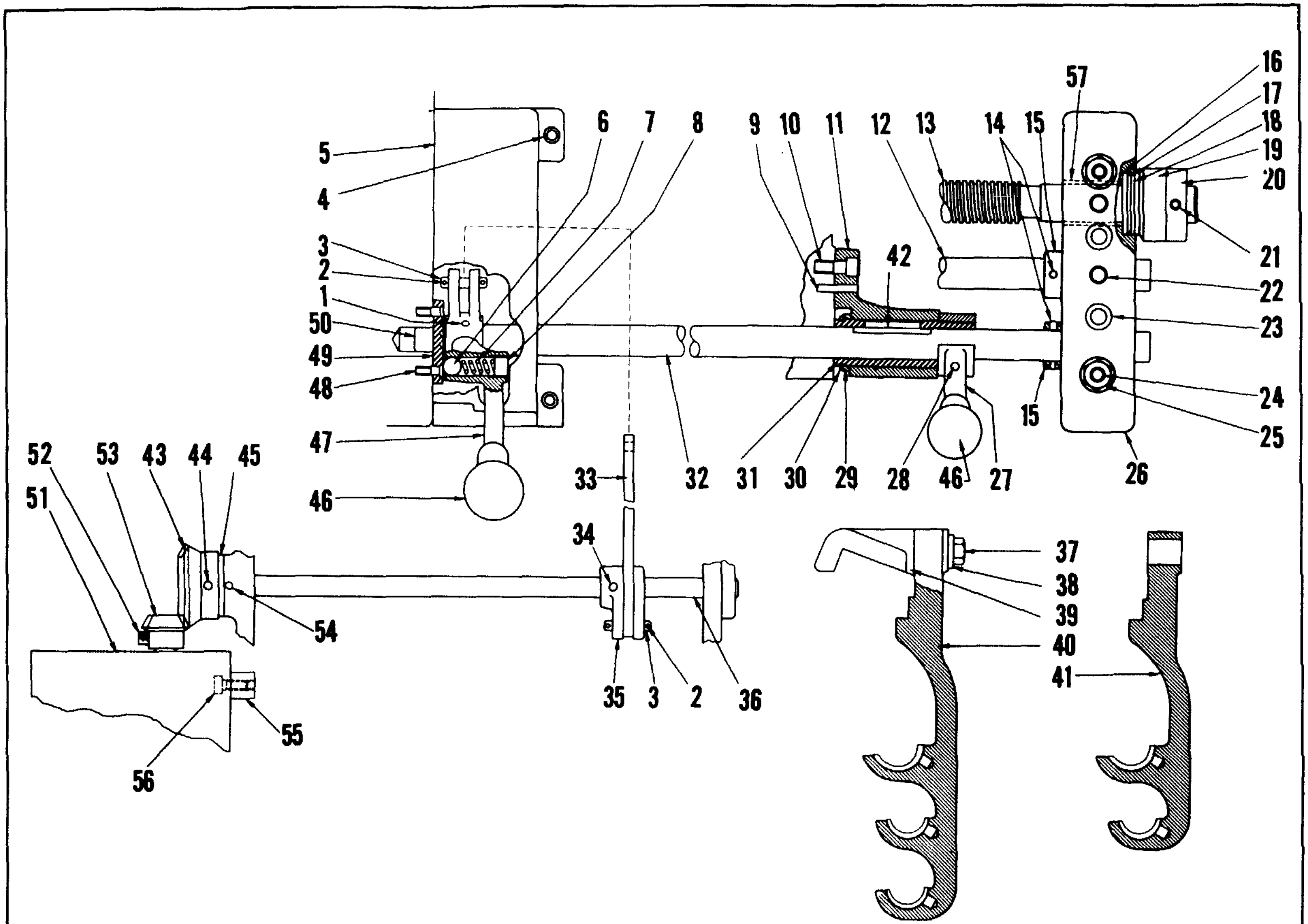

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Figure 11

SPINDLE CONTROL

Key No	Part No	Qty.	Key No.	Part Name	Qty
11-1	Taper Pin	1	11-30	Snap Ring	1
11-2	Cotter Pin	4	11-31	Sleeve	1
11-3	Pin	2	11-32	Control Rod	1
11-4	Screws	2	11-33	Link	1
11-5	Slip-Gear Cover	1	11-34	Taper Pin	1
11-6	Ball	1	11-35	Shifter	1
11-7	Spring	1	11-36	Control Rod	1
11-8	Set Screw	1	11-37	Screw	1
11-9	Pin	2	11-38	Washer	1
11-10	Screws	4	11-39	Block	1
11-11	Apron Bracket	1	11-40	Support	1
11-12	Feed Rod	1	11-41	Support	1
11-13	Lead Screw	1	11-42	Feather Key	1
11-14	Taper Pin	2	11-43	Bevel Gear	1
11-15	Collar	2	11-44	Taper Pin	1
11-16	Bearing Race	1	11-45	Washer	1
11-17	Bearing	1	11-46	Knob	2
11-18	Bearing Race	1	11-47	Spindle Control Handle	1
11-19	Collar	1	11-48	Screw	2
11-20	Nut	1	11-49	Detent Plate	1
11-21	Set Screw	1	11-50	Shifter Stud	1
11-22	Plug	2	11-51	Switch	1
11-23	Screw	2	11-52	Set Screw	1
11-24	Draw Pin	2	11-53	Bevel Gear	1
11-25	Nut	2	11-54	Pin (17” and 19” Only)	1
11-26	Back Box	1	11-55	Spacer	1
11-27	Lever	1	11-56	Screw	1
11-28	Taper Pin	1	11-57	Bushing	
11-29	Collar	1			

IMPORTANT-Include serial number of your lathe when ordering repair parts.

APRON 13"- 15"- 17"- 19"

Key No.	Part Name	Qty.	Key No.	Part Name	Qty
12-1	Apron, 1st Stud	1	12-37	Pin, Straight	1
12-2	Ring, Truarc	1	12-38	Cam, Nut Box	1
12-3	Bearing, N. D. Ball	1	12-39	Spring (cut to suit)	1
12-4	Screw, Headless	2	12-40	Pin, Taper	1
12-5	Key, Woodrufft	1	12-41	Handle, Half Nut	1
12-6	Handwheel (3 spoke)	1	12-42	Apron	1
12-7	Handle	1	12-43	Ball, Steel.	I
12-8	Stud, Rack Wheel	1	12-44	Plunger, Clutch Shifter	1
12-9	Bearing, N.D. Ball	1	12-45	Spring	1
12-10	Wheel, Pick	1	12-46	Screw, Headless	1
12-11	Key	1	12-47	Screw, Headless	1
12-12	Screw, Headless	1	12-48	Plate, Instruction	1
12-13	Pin	1	12-49	Plug, Pipe	1
12-14	Collar, Rick Wheel Stud	1	12-50	Oiler, Gits	1
12-15	Snap Rings	1	12-51	Screw, Headless	1
12-16	Shaft, Rack Wheel Gear	1	12-52	Washer	1
12-17	Bush, Long Fd. Cl. Gr	1	12-53	Screw, Hex Headless	1
12-18	Gear, Long Cross Fd	1	12-54	Nut	1
12-19	Pin, Shifter Interference	1	12-55	Screw, Headless	1
12-30	Pin, Taper	1	13-56	Screw Sock. Hd	4
12-21	Pin, Gear Spacing	4	12-57	Plate, Feed Direction	1
12-22	Gear, Siding Inter	1	12-58	Screw, Set	2
12-23	Gear, Cross Feed Clutch	1	12-59	Nut	2
12-24	Bush, Cross Feed Gear	1	12-60	Gear, Bevel	1
12-25	Pin, Clutch Shifter Handle Stop	1	12-61	Bush, Bevel Gear Shaft Rear	1
12-26	Shaft, Clutch Shifter	1	12-62	Shaft, Bevel Gear	1
12-27	Pin, Taper	1	12-63	Bush Bevel Gear Shaft Front	1
12-28	Handle Clutch Shifter	1	12-84	Plug, Welch	1
13-29	Handle, Ball	2	12-65	Plunger, Oil	1
12-30	Set Screw (13" - 15")	1	12-66	Spring, Oil Plunger	1
13-31	Bush, Clutch Shifter Shaft	1	12-87	Rod, Oil Cylinder Spring Guide	1
12-32	Shoe, Clutch Shifter	1	12-68	Plug, Oil Cylinder Pipe	1
12-33	Plug, Welch	1	12-69	Screw	1
12-34	Box, Nut (English)	1	12-70	Gib	1
	Box, Nut (Metric)	1	12-118	Pin	1
12-35	Pin	2	12-119	Pipe Plug	1
12-36	Screw	1			

IMPORTANT -Include serial number of your lathe when ordering repair parts.

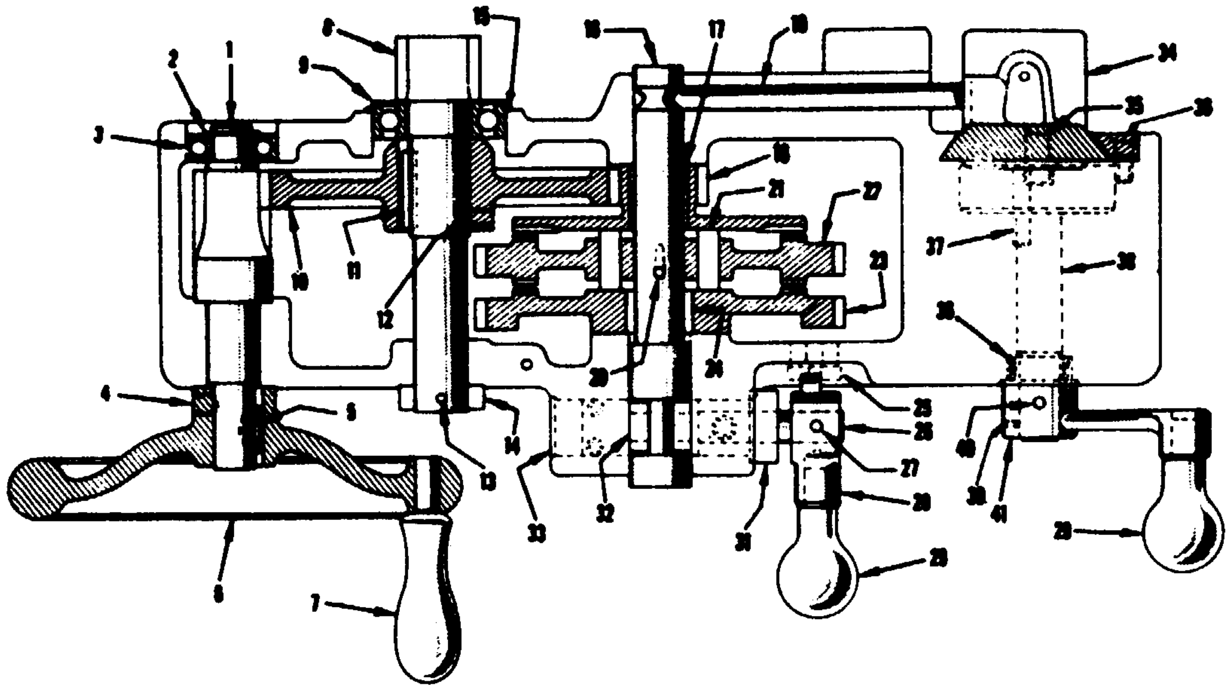
APRON FEED REVERSE 13" - 15"

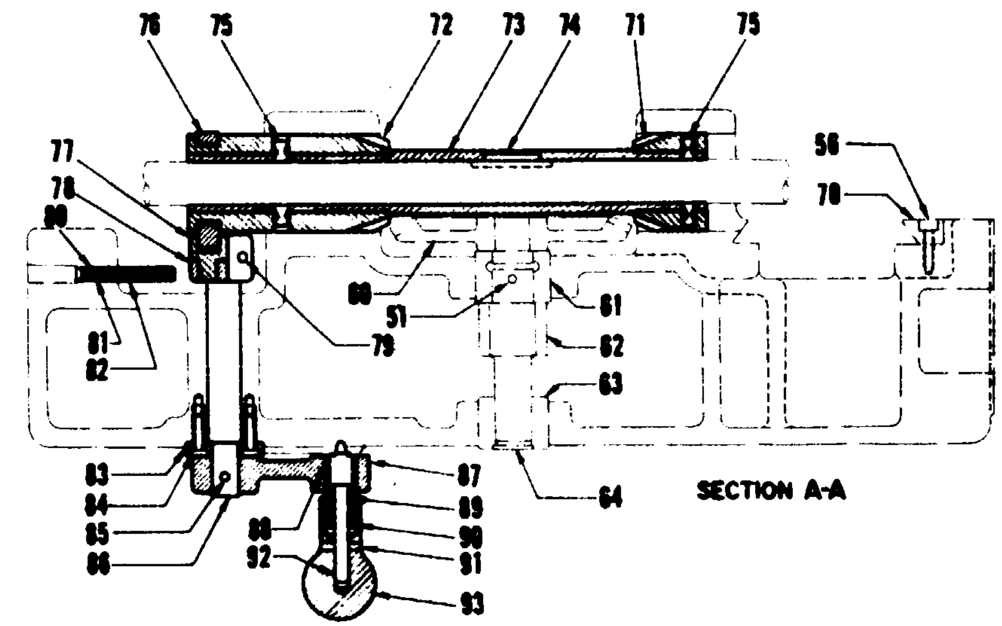
Key No.	Part Name	Qty.	Key No.	Part Name	Qty
12-105	Gear, Bevel	1	12-112	Bush, Rear Bevel Gear Shaft	1
12-106	Pinion, Bevel	1	12-113	Shaft, Bevel Gear	1
12-107	Collar, Bevel Pinion Thrust	1	12-114	Bush, Front Bevel Gear Shaft	1
12-108	Key	1	12-115	Plug	1
12-109	Collar, Bevel Pinion Thrust	1	12-116	Screw	1
12-110	Pin	1	12-117	Gib	1
12-111	Ring, Truarc Snap	1			

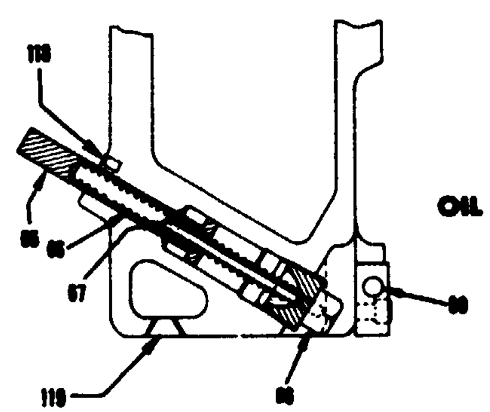
IMPORTANT -Include serial number of your lathe when ordering repair parts.

APRON FEED REVERSE 17" - 19" SECTION AA

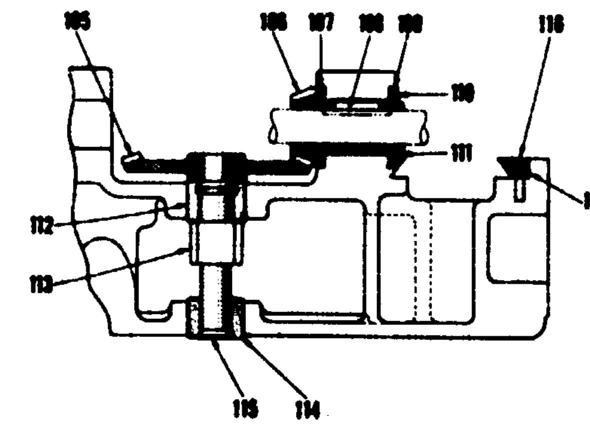
Key No.	Part Name	Qty.	Key No.	Part Name	Qty
12-71	Pinion, Bevel	1	12-83	Collar, Shift Retainer	1
12-72	Pinion, Shifter	1	12-84	Screw, Slotted Head	2
12-73	Sleeve, Bevel Pinion	1	12-85	Pin, Taper	1
12-74	Key, Feather	1	12-86	Shaft, Fd. Rev. Handle	1
12-75	Pin, Straight	4	12-87	Handle, Feed Rev.	1
12-76	Shoe, Shifter	1	12-88	Pin, Taper	1
12-77	Fork, Reverse	1	12-89	Spring (cut to suit)	1
12-78	Lever, Feed Rev.	1	12-90	Sleeve	1
12-79	Pin, Taper	1	12-91	Pin, Taper	1
12-80	Screw, Set	1	12-92	Plunger	1
12-81	Plug	1	12-93	Knob	1
12-82	Screw, Set	1			

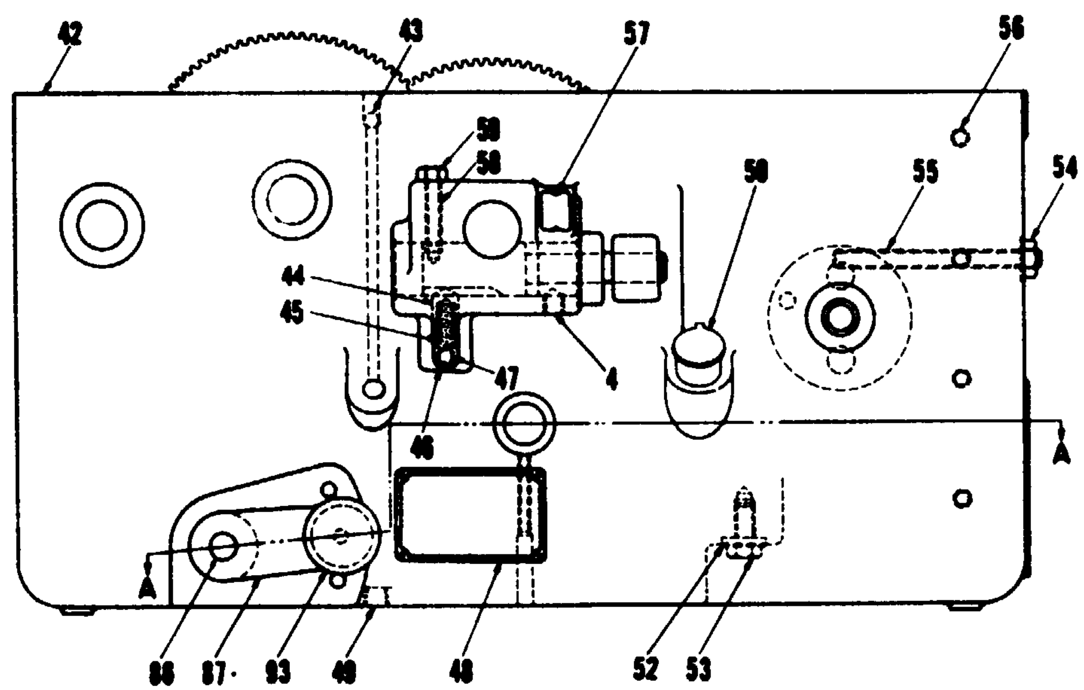


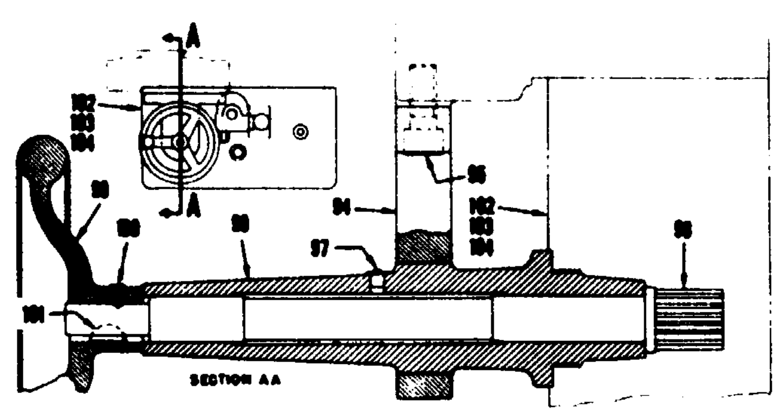




OIL PLUNGER

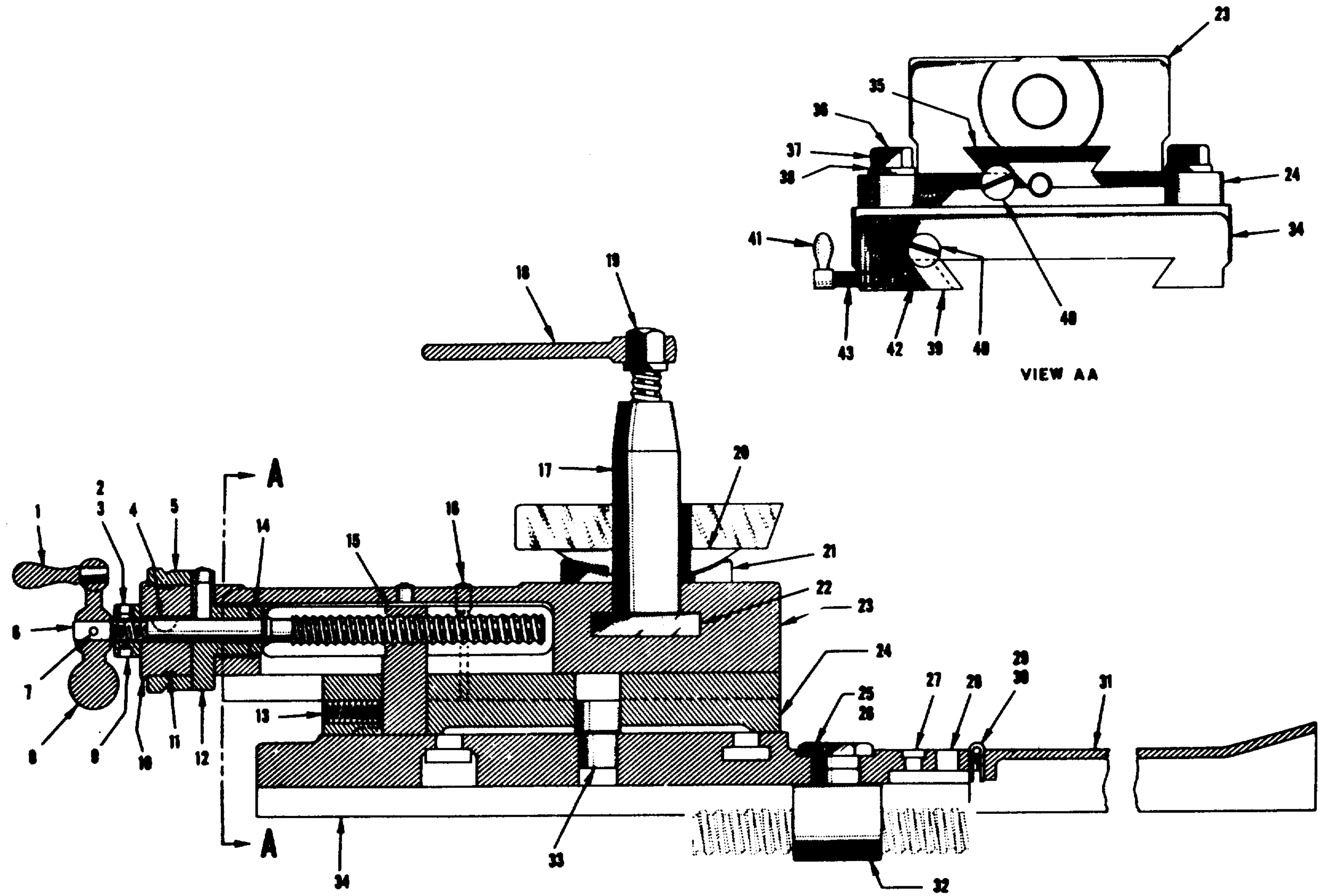






APRON FIRST STUD BRACKET ASSEMBLY
17" - 19" PLAIN AND SLIDING BED GAP LATHE

Key No.	Part Name	Qty.
12-94	Bracket, First Stud	1
12-95	Screw, Socket Head	2
12-96	Bush, First Stud	1
12-97	Oiler	1
12-98	Stud, Apron	1
12-99	Handwheel	1
12-100	Screw, Headless	1
12-101	Key, Woodruff	1
12-102	Apron, (Use Fin. Det. D-96A-1)	1
12-103	Plug, Front	1
12-104	Plug, Rear	1



VIEW AA
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COMPOUND REST WITH TOOL POST

Key No..	Part No	Qty.	Key No.	Part Name	Qty
13-1	Handle, Ball	1	13-22	Washer, Tool Post Square	1
13-2	Screw, Set	2	13-23	Slide, Top	1
13-3	Plug	2	13-24	Slide, Swivel	1
13-4	Key, Woodruff	1	13-25	Screw, Cross Feed Nut	1
13-5	Collar, Graduated (English)	1	13-26	Washer	1
	(Metric)	1	13-27	Plug (Not used when Taper Att. is furnished)	1
13-6	Screw, Top Slide (English)	1			
	(Metric)	1	13-28	Plug (Not used when Taper Att. is furnished)	1
13-7	Pin, Taper	1			
13-8	Handle, Single Ball Crank	1	13-29	Hinge, Dirt Guard	1
13-9	Nut, lock	1	13-30	Screw, Spec. Sock. Hd.	4
13-10	Bush, Graduated Collar	1	13-31	Guard, Dirt	1
13-11	Spring	1	13-32	Nut, Cross Feed (English)	1
13-12	Bush, Top Slide Screw	1		(Metric)	1
13-13	Screw, Set	1	13-33	Pin, Shoulder	1
13-14	Collar, Top Slide Screw	1	13-34	Slide, Bottom	1
13-15	Nut, Top Slide (English)	1	*13-35	Gib, Top Slide	1
	(Metric)	1	13-36	Bolt, T-slot	2
13-16	Oiler	4	13-37	Nut, Hex	2
13-17	Post, Tool	1	13-38	Washer	2
13-18	Wrench, Tool Post	1	*13-39	Gib, Bottom Slide	1
13-19	Screw, Square Head Tool Post	1	13-40	Screw, Gib	4
13-20	Wedge, Tool Post	1	13-41	Handle	1
13-21	Collar, Tool Post	1	13-42	Stud, Binding	1
			13-43	Pin	1

* Gibs are furnished slightly oversize. Customer to fit and cut to suit on assembly.

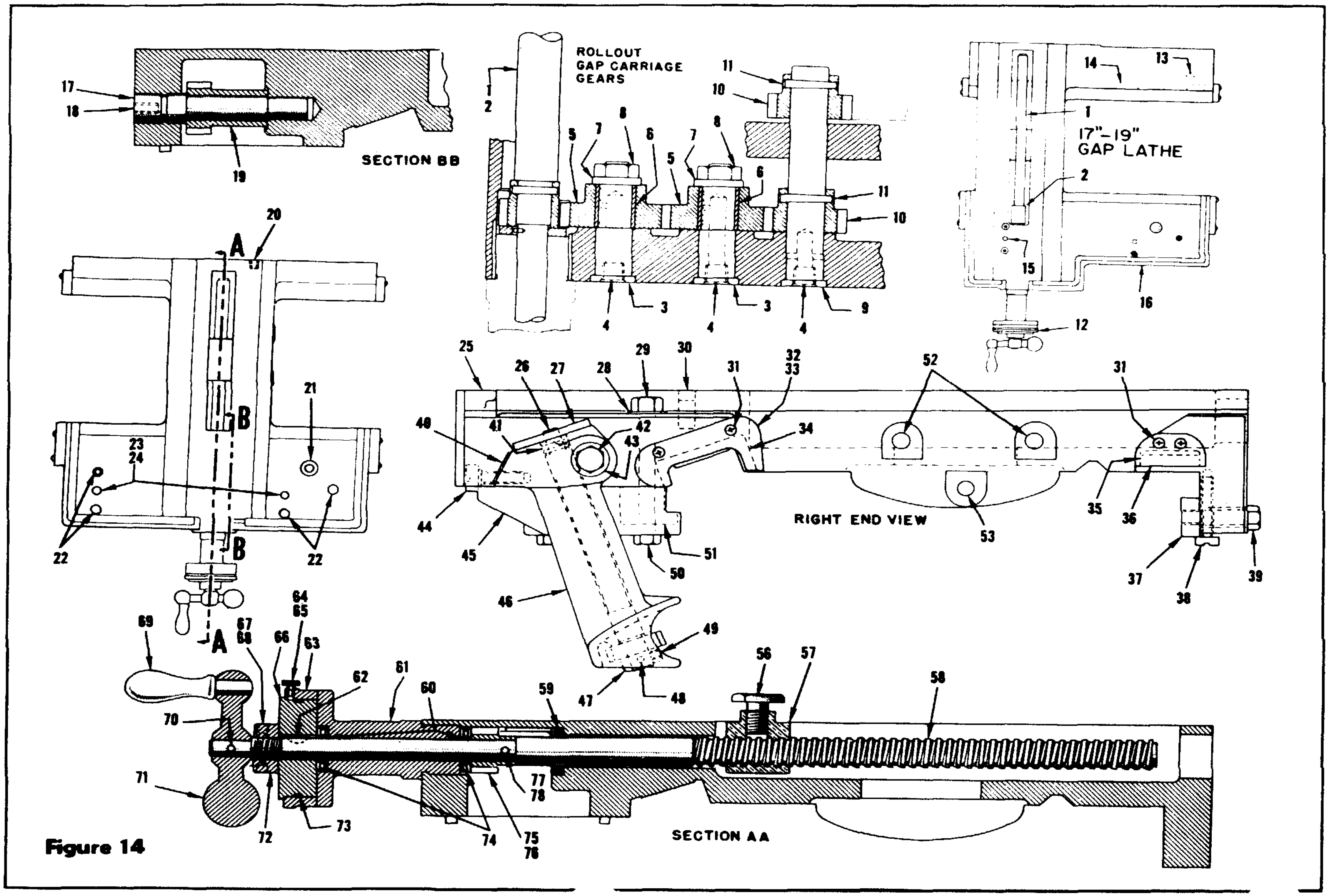
SECTION BB
ROLLOUT
GAP CARRIAGE
GEARS
17"-19"
GAP LATHE
RIGHT END VIEW
SECTION AA
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Figure 14

17" - 19" PLAIN & SLIDING BED GAP LATHES
ROLL-OUT or GAP LATHE CARRIAGE & CROSS FEED SCREW

KEY No.	Part Name	Qty.	Key No.	Part Name	Qty.
14-1	Screw Cross Feed		14- 7	Washer	2
	(Without Taper Attachment - English	1	14- 8	Nut, Hex	2
	(Without Taper Attachment - Metric).	1	14- 9	Shaft, Cross Feed Driving	1
	(Without Taper Attachment - English)	1	14-10	Gear, Cross Feed Driving-	2
	(Without Attachment - Metric	1	14-11	Pin, Taper	2
14- 2	Nut, Cross Feed		14-12	Collar, Graduated	
	(With or Without Taper Attachment - English)	1		(With or Without Taper Attachment - English)...	1
	(With or Without Taper Attachment -Metric	1		(With or Without Taper Attachment - Metric)	1
14- 3	Stud, Cross Feed Intermediate Gear	2	14-13	Screw, Hex Cap	2
14- 4	Plug, Pipe	3	14-14	Gib, Rear	1
14- 5	Gear, Cross Feed Intermediate	2	14-15	Pin, Taper	1
14- 6	Bush, Cross Feed Intermediate Gear	2	14-16	Carriage	1

IMPORTANT-Include serial number o your lathe when ordering repair parts.

CARRIAGE AND CHASING DIAL

KEY No.	Part Name	Qty.	Key No.	Part Name	Qty.
14-17	Stud,, Idler Pinion	1	14-57	Nut, Cross Feed &rev (13" & 15" Only)	1
14-18	Screw, Set	1	14-58	Screw, Feed	
14-19	Pinion Idler	1		(Without Taper Att. Without Hydra Trace)	
14-20	Pipe Plug	1		English	1
14-21	Screw	1		Metric	1
14-27	Screw	1		(With Taper Att. Without Hydra Trace)	
14-23	Pin	2		English	1
14-24	Plug	2		Metric	1
14-25	Carriage	1	14-59	Clipper &al	1
14-26	Shaft Bracket	1	14-60	Bearing Pilot	1
14-27	Dial	1	14-61	Bush, Cross Feed	
14-28	Washer	1		(Without Taper Att. Without Hydra Trace)	
14-29	Screw, Hex Cap	1			1
14-30	Plug	1			1
14-31	Screw Rd. Hd. Machine	8		(With Taper Att. Without Hydra Trace)	
14-32	Wiper, Shear Front Right Hand	1		English	1
14-33	Wiper, Shear Front l-it Hand	1		Metric	1
*14-34	Neoprene	2	14-62	Key	1
*14-35	Neoprene	2	14-63	Collar, Grad	
14-36	Wiper, Shear Rear	2		(With or Without Taper Att.)	
*14-37	Gib, Carriage Rear	1		English	1
14-38	Screw, Gib	2		Metric	1
14-39	Screw, Hex Cap	2	14-64	Screw	1
14-40	Plate, Chasing Dial Instruction	1	14-65	Plug	1
14-41	Pin, Taper	1	14-66	Hub, Graduated Collar	1
14-42	Cap, &rev	1	14-67	Screw	2
14-43	Washer	1	14-68	Plug	2
14-44	Screw, Gib	2	14-69	Handle, Ball	1
14-45	Gib, Carriage Front	2	14-70	Pin, Taper	1
14-46	Bracket,, Dial	1	14-71	Handle, Ball	1
14-47	Wheel,, Chasing Dial Worm	1	14-72	Nut	1
14-48	Pin, Taper	1		Lock, Nut	1
14-49	Screw, Set	I	14-73	Spring	1
14-50	Screw, Hex Cap	4	14-74	Needle Bearing	1
14-51	Clamp, Carriage	1	14-75	Pinion Cross Feed &rev (Without Taper Att.)	1
14-52	Screw	1	14-76	Sleeve Cross Feed Pinion	
14-S3	Screw (17" & 19" Only)	I		(With Taper Att. Without Hydra Trace)	1
14-54	Nut 17" & 19"" Only	1	14-77	Pin, Taper (Without Taper Att.)	1
14-SS	Nut, Cross Feed Screw (17" & 19" Only)	1	14-78	Key, Feather ((With Taper Att.)	1
14-56	Screw (13" & 15" Only)	1			

*Neoprene and Gigs are furnished slightly oversize. Customer to fit and cut to suit on assembly .

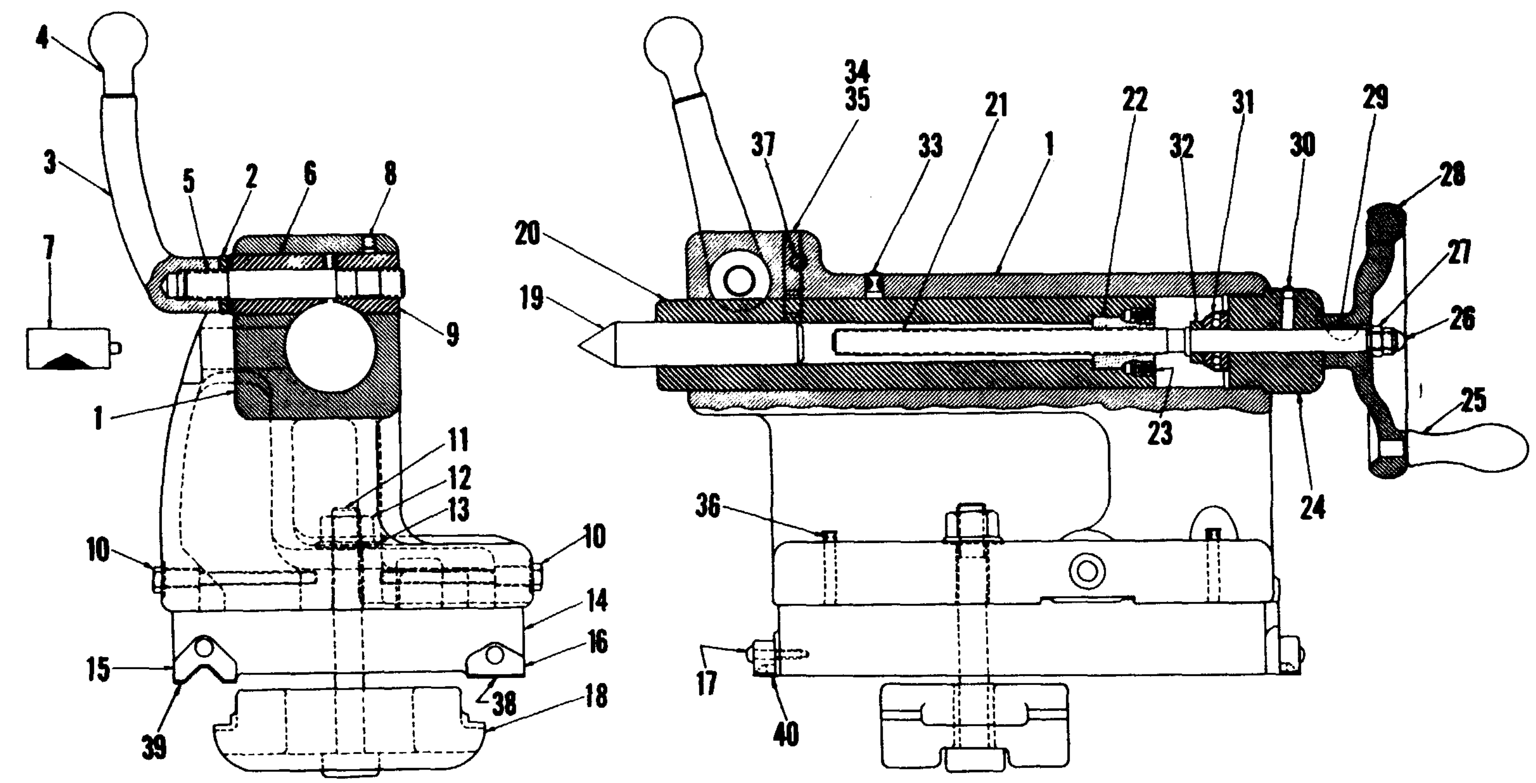

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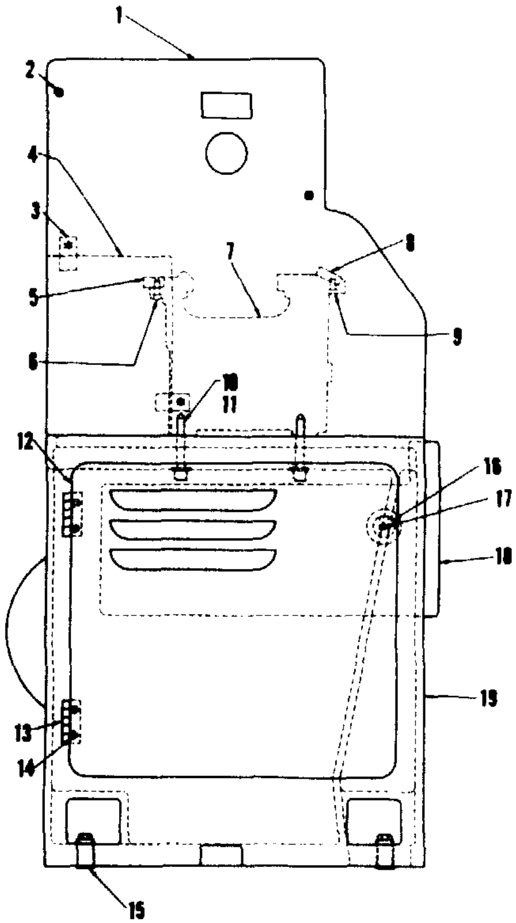
Figure 15

TAILSTOCK

Key No.	Part Name	Qty.	Key No.	Part Name	Qty
15-1	Top, Tailstock.....................................	1	15-21	Screw, Spindle....................................	1
15-2	Washer	1	15-22	Nut, Tailstock	1
15-3	Handle, Binder	1	15-23	Screw, Set	2
15-4	Handle, Ball...	1	15-24	Cap, Tailstock.....................................	1
15-5	Stud, Tailstock....................................	1	15-25	Handle, Ball	1
15-6	Bush, Upper Binder	1	15-26	Nut, Acorn	1
15-7	Key, Plug...	1	15-27	Nut, Hex	1
15-8	Pin Stop	1	15-28	Handwheel...	1
15-9	Bush, Lower Binder	1	15-29	Key, Woodruff	1
15-10	Screw, Hex Cap	1	15-30	Oiler	1
15-11	Bolt, Rough	1	15-31	Bearing, Ball	1
15-12	Nut, Hex	1	15-32	Collar, Spindle Screw	1
15-13	Washer	1	15-33	Oiler	1
15-14	Bottom, Tailstock................................	1	15-34	Screw, Set	2
15-15	Wiper, Rear Shear	2	15-35	Plug, Brass	2
15-16	Wiper, Front Shear..............................	2	15-36	Oiler	2
15-17	Screw..	4	15-37	Pin Stop..	1
15-18	Clamp, Tailstock..................................	1	*15-38	Front Neoprene	1
15-19	Center, Spindle	1	*15-39	Rear Neoprene	1
15-20	Spindle, Tailstock	1	15-40	Felt..	2

*Neoprene is furnished slightly oversize. Customer to fit and cut to suit on assembly.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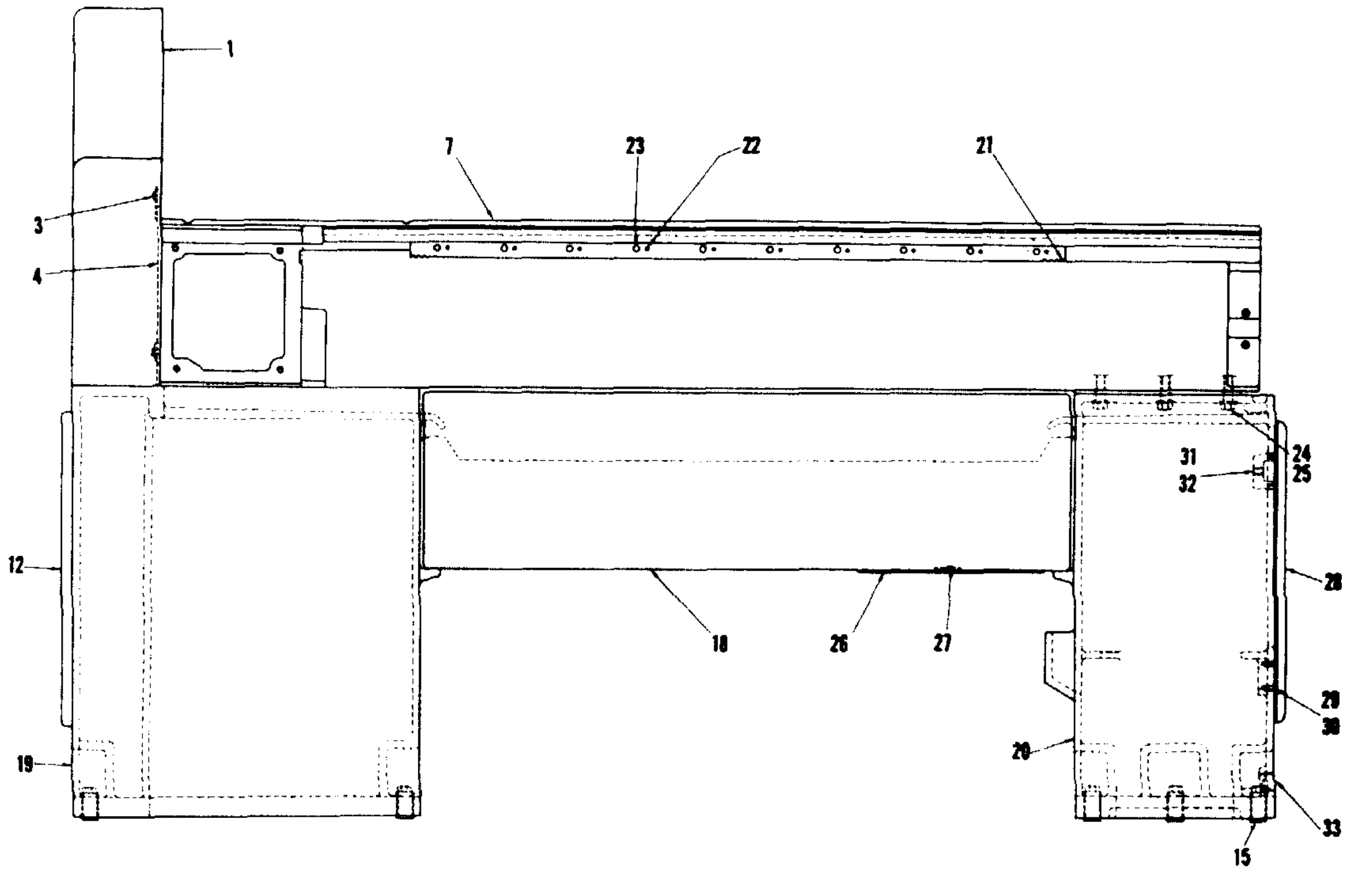
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Figure 16

BED, PAN, LEGS & HEAD END COVER

Key No.	Part Name	Qty.	Key No.	Part Name	Qty.
16-1	Cover, Feed Gear............................	1	16-18	Pan (Specify Center Capacity)	1
16-2	Screw, Socket Head Cap..................	3	16-19	Leg, Head End Cabinet	1
16-3	Screw, Hex Head Cap	3	16-20	Leg, Tail End Cabinet.......................	1
16-4	Plate, Head Feed Cover Back	1	16-21	Rack, (Specify Center Capacity).......	Var. No.
16-5	Shear, Rear (Specify Center Capacity)	1	16-22	Pin, Taper	Var. No.
16-6	Screw	Var. No.	16-23	Screw	Var. No.
16-7	Bed, (Specify Length)	1	16-24	Screw, (Tail End Leg to Bed)............	6
16-8	Shear, Front (Specify Center Capacity)	1	16-25	Washer	6
16- 9	Screw	Var. No.	16-26	Plate, (1 - For Each Dry Pan)	1
16-10	Screw, (Head End Leg To Bed)	4	16-27	Screw, (2 - For Each Dry Pan)..........	2
16-11	Washer..	4	16-28	Door, Tail End Leg	1
16-12	Door, Head End Leg.	1	16-29	Hinge, Door.....................................	2
16-13	Hinge, Door	2	16-30	Screw..	4
16-14	Screw	4	16-31	Magnet, Alnico Carboloy	1
16-15	Screw, Leveling (Head and Tail Legs)	7	16-32	Screw, Machine Flat Head................	1
16-16	Magnet, Alnico Corboloy...................	1	16-33	Plug, Pipe	1
16-17	Screw, Brass Machine Flat Head......	1			

IMPORTANT-Include serial number of your lathe when ordering repair parts.

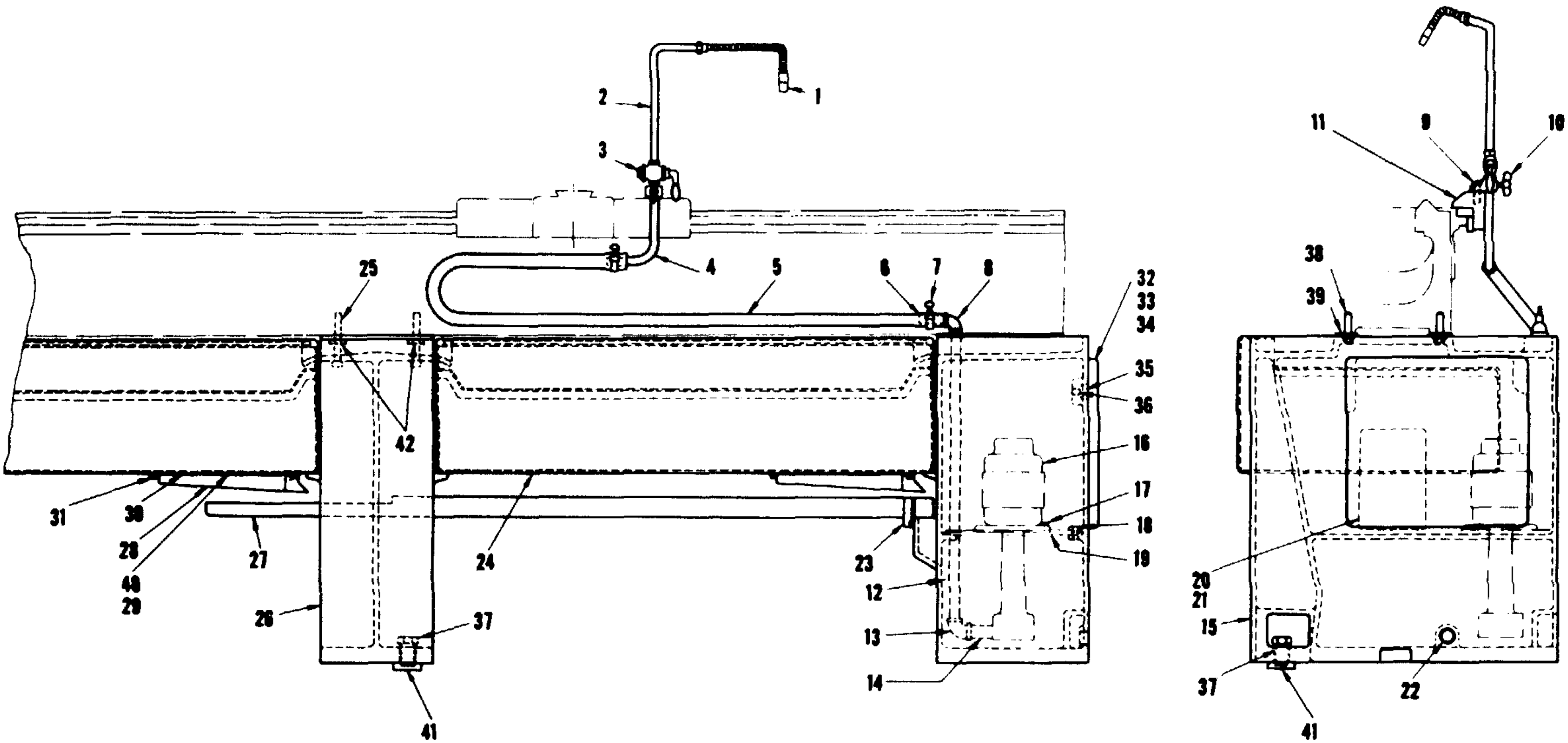
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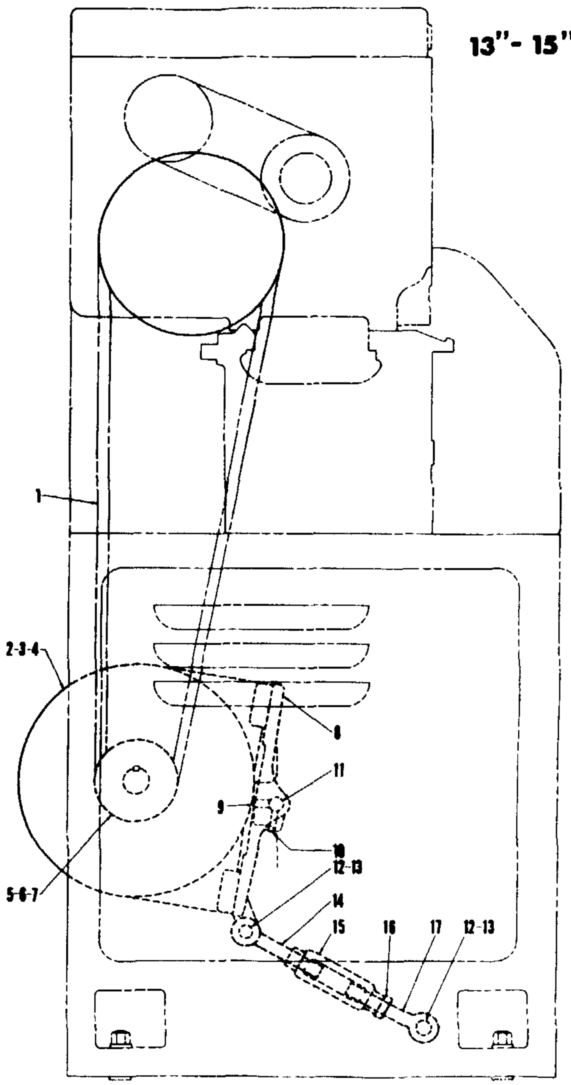
Figure 17

TAIL CABINET LEG, CENTER LEG TROUGH,
COOLANT PUMP WITH PIPING

Key No.	Part Name	Qty.	Key No.	Part Name	Qty.
17-1	Spout, "Stayput" Flexible Coolant..	1	17-22	Plug, Pipe....................................	1
17-2	Pipe, Distributor	1	17-23	Screw, Binding Head Machine	4
17-3	Cock, Stop	1	17-24	Pan, (Specify Center Capacity)......	1-3
17-4	Pipe, Distributor............................	1	17-25	Screw, Socket Hd. Cap (Middle Leg to Bed)..	4
17-5	Hose, Rubber (Cut to Suit)	1	17-26	Leg, Middle	1-2
17-6	Nipple...	1	17-27	Trough, Coolant (Specify Length)...	1
17-7	Clamp, Hose	2	17-28	Spout, Drain..................................	1
17-8	Elbow, 90°	1	17-29	Screw, (Each Strainer) Spout.........	2
17-10	Screw, Thumb	1	17-31	Gasket Drain Spout....................... Screw	1 9
17-11	Bracket...	1	17-32	Door	1
17-12	Pipe, (Cut to Suit)..........................	1	17-33	Hinge, Door	2
17-13	Elbow, Reducing 90°	1	17-34	Screw	4
17-14	Nipple...	1	17-35	Magnet, Alnico..............................	1
17-15	Leg, Tail End Cabinet....................	1	17-36	Screw, Brass Machine Flat Head . .	1
17-16	Pump, Ruthman (Specify H.P., Voltage & Cycles)..........................	1	17-37	Screw, Leveling (Specify Middle or Tail Leg)	Var. No.
17-17	Screw, (Pump to Plate)..................	4	17-38	Screw	1
17-18	Screw, Hex Cap.	2	17-39	Washer	1
17-19	Plate, Pump Support.	1	17-40	Strainer...	1
17-20	Cover, Reservoir Hole (With Pump)	1	17-41	Leveling Plate	Var. No.
17-21	Cover, Reservoir Hole (Without Pump)	1	17-42	Washers (Middle Leg)...................	2

IMPORTANT-Include serial number of your lathe when ordering repair parts.

13"- 15" Regal



17"- 19" Regal

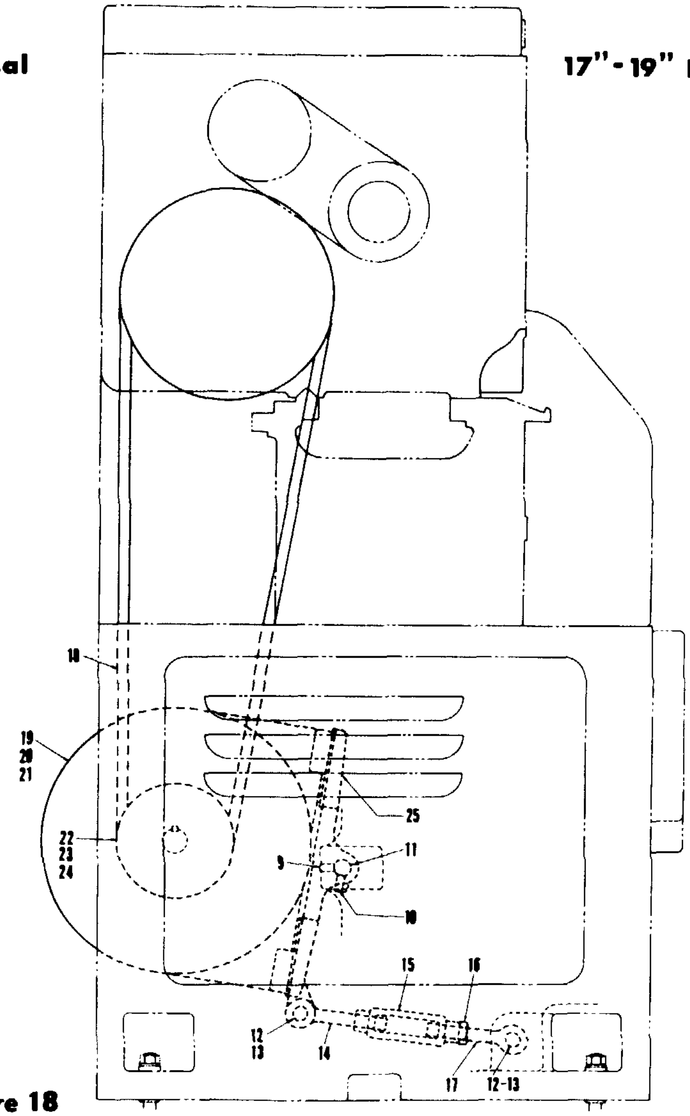


Figure 18

MOTOR DRIVE & MOUNTING ASSEMBLY

Key No.	Part Name	Qty.	Key No.	Part Name	Qty
18-1	V-Belt, Gates	3	18-14	Bolt Eye, Left Hand Thread	1
18-2	Motor, A-C, New Nema Frame Number Specify Current, Voltage, Horsepower, Phase & Cycle	1	18-15	Turnbuckle	1
			18-16	Nut, Hex	1
18-3	Screw	4	18-17	Bolt, Eye, Right Hand Thread	1
18-4	Washer	4	18-18	V-Belt, Gates	4
18-5	Pulley, Motor Specify Cycle, Horsepower & Speed Range Desired	1	18-19	Motor, A-C, New Nema Frame Number Specify Current, Voltage, Horsepower, Phase & Cycle	1
18-6	Key	1	18-20	Screw	4
18-7	Screw, Set	1	18-21	Washer	4
18-8	Plate, Motor	1	18-22	Pulley, Motor Specify Cycle, Horsepower & Speed Range Desired	1
18-9	Screw, Set	1			
18-10	Screw, Set	1	18-23	Key	1
18-11	Stud, Motor Plate	1	18-24	Screw, Set	1
18-12	Ptn, Link	2	18-25	Plate, Motor	1
18-13	Pin, Cotter	4			

IMPORTANT - Include serial number of your lathe when ordering repair parts.

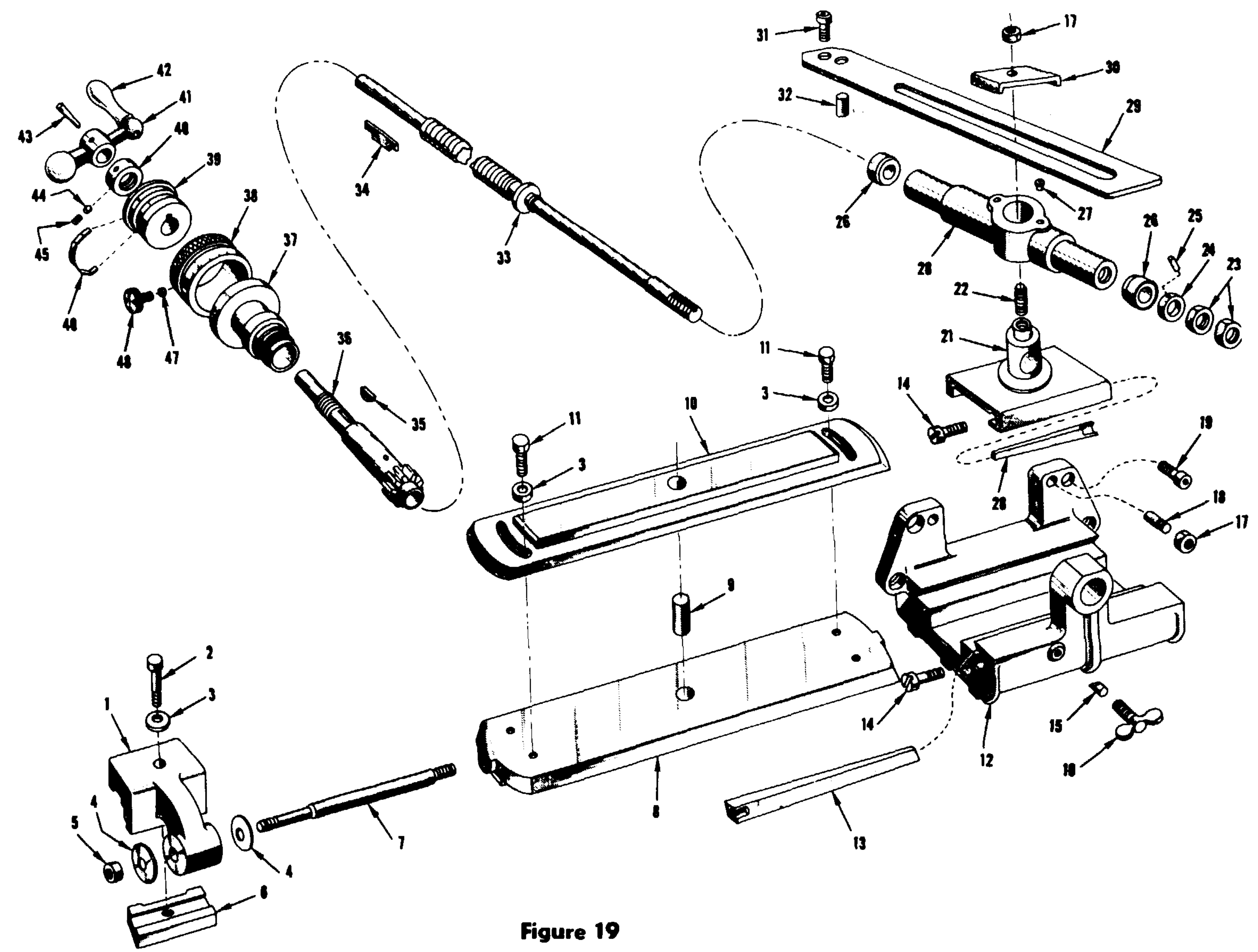

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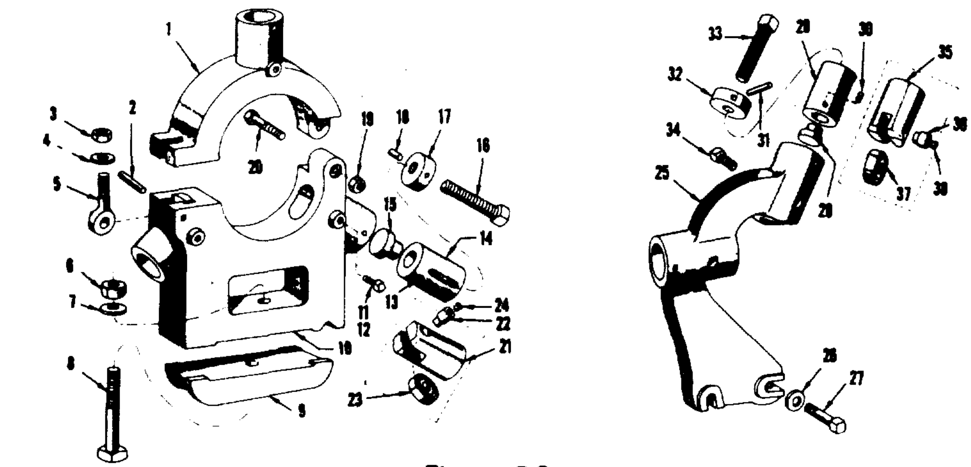
Figure 19

TAPER ATTACHMENT

Key No.	Part Name	Qty	Key No.	Part Name	Qty
19-1	Bracket, Bed	1	19-27	Oiler	2
19-2	Screw, Hex Hd. Cap	1	19-28	Shoe, Carriage	1
19-3	Washer	3	19-29	Bar, Taper Attachment Draw	1
19-4	Washer	2	19-30	Plate, Guide Bar Clamp	1
19-5	Nut, Hex	1	19-31	Screw, Sock Hd. Cap	1
19-6	Clamp, Bed Bracket	1	19-32	Pin	1
19-7	Rod, Bed Bracket Clamp	1	19-33	Screw, Cross Feed (English)	1
19-8	Slide, Taper Attachment	1		(Metric)	1
19-9	Plug, Guide Bar Swivel	1	19-34	Key, Feather	1
19-10	Bar, Guide (English)	1	19-35	Key	1
	Bar, Guide (Metric)	1	19-36	Sleeve, Cross Feed Pinion (English)	1
19-11	Screw, Hex Cap	2		Sleeve, Cross Feed Pinion (Metric)	1
19-12	Bracket, Taper Attachment Slide	1	19-37	Bush, Cross Feed Screw (English)	1
*19-13	Gib, Slide	1		Bush, Cross Feed (Metric)	1
19-14	Screw, Gib	4	19-38	Collar, Graduated (English)	1
19-15	Plug, Slide Gib 1-2	1		Collar, Graduated (Metric)	1
19-16	Screw, Thumb	1	19-39	Hub, Graduated Collar (English)	1
19-17	Nut, Hex	3		Hub, Graduated Collar (Metric)	1
19-18	Pin, Draw	2	19-40	Nut, Lock	1
19-19	Screw, Sock. Hd. Cap	4	19-41	Handle, Ball	1
*19-20	Gib, Guide Bar Shoe	1	19-42	Handle, Ball	1
19-21	Shoe, Guide Bar	1	19-43	Pin, Taper	1
19-22	Stud, Carriage Shoe	1	19-44	Plug	2
19-23	Nut, Hex Lock	2	19-45	Screw	2
19-24	Collar, Cross Feed Screw	1	19-46	Spring	1
19-25	Pin, Straight	1	19-47	Plug	1
19-26	Bearing, Thrust	2	19-48	Screw	1

* Gibs are furnished slightly oversize. Customer to fit and cut to suit on assembly.



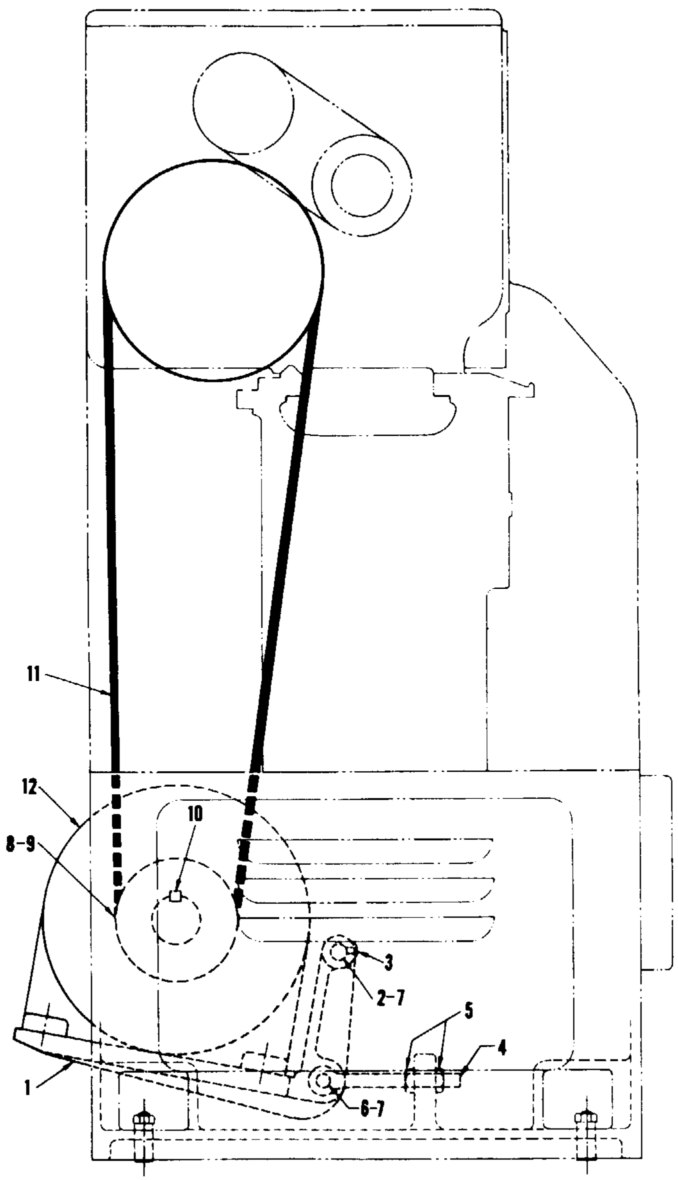
STEADY REST **Figure 20** FOLLOW REST

STEADY REST CAPACITY
13"-15" 1/2" to 4"
17"-19" 3/8" to 6"

FOLLOW REST CAPACITY
13"-15" 3/8" to 2-3/4"
17" 1/2'" to 3-1/4"
19" 1/2" to 3-3/4"

Key No.	Part Name	Qty.	Key No.	Part Name	Qty.
20-1	Top, Steady Rest................................	1	20-20	Screw, Hex Cap..................................	1
20-2	Pin, Straight	1	20-21	Jaw, Roller..	3
20-3	Nut	1	20-22	Stud..	3
20-4	Washer	1	20-23	Roller...	3
20-5	Bolt, Eye	1	20-24	Oiler	3
20-6	Nut	1	20-25	Rest, Follow.......................................	1
20-7	Washer	1	20-26	Washer..	2
20-8	Bolt, Rough	1	20-21	Screw, Hex Cap..................................	2
20-9	Clamp, Steady Rest	1	20-28	Tip, Bronze..	2
20-10	Bottom, Steady Rest	1	20-29	Jaw, Follow Rest	2
20-11	Screw, sq. Hd. Set (Brz. Tip Jaws)	3	20-30	Screw, Set..	2
20-12	Screw, sq. Hd. Set (Roller Jaws)	3	20-31	Pin, Straight..	4
20-13	Screw, Set..	3	20-32	Collar, Jaw Adj. Screw.........................	2
20-14	Jaw, Steady Rest	3	20-33	Screw, sq. Hd. Set	2
20-15	Tip, Bronze..	3	20-34	Screw, sq. Hd. Set...............................	2
20-16	Screw, Sq. Hd. Set	3	20-35	Jaw, Roller..	2
20-17	Collar, Jaw Adj. Screw.........................	3	20-36	Stud..	2
20-18	Pin, Straight	6	20-37	Roller...	2
20-19	Nut	1	20-38	Oiler	2

IMPORTANT - Include serial number of your lathe when ordering repair parts.



Key No.	Part Name	Qty.
21-2	Plate, Motor..	1
21-2	Shaft, Motor Plate	1
21-3	Screw, Set..	2
21-4	Bolt, Eye	1
21-5	Nut, Hex...	2
21-6	Pin, Link	1
21-7	Cotter Pin (3/4" Long)..........................	2
21-8	Pulley, Motor 3" P.D. 1-1/8" Hole (New nema frame) for 50 Cy. 3 & 5 HP & 25 Cy. 3 HP	1
21-9	Pulley, Motor 3" P.D. 1-1/8" Hole (New nema frame) for 50 CY. 3 & 5 HP & 25 Cy. 3 HP	1
	Pulley, Motor 3" P.D. 1-1/8" Hole (New nema frame) for 60 CY. 3 & 5 HP ..	1
	Pulley, Motor 3.6" P.S. 1-3/8" Hole (New nema frame) for 25 Cy. 5 HP	1
21-10	Key	1
21-11	V-Belt, Gates......................................	1
21-12	Motor, A-C New Nema Frame Number (Specify current voltage, horsepower & cycle to suit order). ..	1

IMPORTANT - Include serial number of your lathe when ordering repair parts.

MOTOR DRIVE

Figure 21

GEARED FEED, TRAVERSE DRIVE AND SWITCH CONTROL ASSEMBLIES
17" - 19" SLIDING BED GAP AND PLAIN GAP LATHES

Key No.	Part Name	Qty.	Key No.	Part Name	Qty.
22-1	Spacer	1	22-71	Race, Inner	1
22-2	Plate, Bottom Bed Bracket	1	22-72	Brg	1
22-3	Screws, Soc Hd Cap	14	22-73	Plug	1
22-4	Screw, Soc Hd Cap	1	22-74	Lever, Upper	1
22-5	Screw, Soc Hd Cap	5	22-75	Key	1
22-6	Screw, Soc Hd Cap	3	22-76	Ball, Brg	1
22-7	Screw, Soc Hd Cap	1	22-77	Ball, Brg	1
22-8	Screw, Soc Hd Cap	2	22-78	Key	1
22-9	Screw, Soc Hd Cap	4	22-79	Ring, Snap Truarc	1
22-10	Screw, Soc Hd Cap	2	22-80	Lever, Lower	1
22-11	Pin, Taper	2	22-81	Gear, Drive Shaft	1
22-12	Pin, Taper	1	22-82	Stud, Idler	1
22-13	Pin, Taper	1	22-83	Race, Inner	1
22-14	Pin, Taper	1	22-84	Brg.	1
22-15	Pin, Taper	1	22-85	Gear, Idler	1
22-16	Pin, Taper	1	22-86	Stud, Feed Rod Drive	1
22-17	Pin, Taper	1	22-87	Race, Inner	1
22-18	Pin, Taper	3	22-88	Brg	1
22-19	Pin, Taper	4	22-89	Gear, Feed Rod Drive	1
22-20	Gear, Idler	1	22-90	Plug, Expansion	1
22-21	Plug, Idler Gear	1	22-91	Collar	1
22-22	Brg., Torrington	1	22-92	Pinion, Lead Screw	1
22-23	Gear, Drive Shaft Feed	1	22-93	Nut	5
22-24	Washer	1	22-94	Pin	2
22-25	Nut	1	22-95	Shoe, Shifter	1
22-26	Pin, Cotter	1	22-96	Lever, Shifter	1
22-27	Pin, Cotter	9	22-97	Knob	1
22-28	Pin, Cotter	1	22-98	Sleeve	1
22-29	Pin, Link	4	22-99	Spring (Cut to Suit)	1
22-30	Lever, Switch Control	1	22-100	Plunger	1
22-31	Washer	2	22-101	Handle, Feed Rev	1
22-32	Screw, Set	2	22-102	Shaft, Shifter	1
22-33	Screw, Set	3	22-103	Screw	2
22-34	Screw, Set	4	22-104	Screw	1
22-35	Screw, Set	2	22-105	Clamp, Brg	2
22-36	Screw, Set	2	22-106	Pin, Draw	3
22-37	Gear, Switch Control	1	22-107	Oiler	1
22-38	Shaft, Switch Control (Without Apron	1	22-108	Pipe, Plug	1
	Control)	1	22-109	Screw	2
22-39	Rod, Control (With Apron Control)	1	22-110	Plug	4
22-40	Spacer	1	22-111	Link	1
22-41	Collar, Brg	1	22-112	Cover, Switch	1
22-42	Sleeve, Drive Shaft Fd	1	22-113	Plug, Shoulder	1
22-43	Brg , Ball Duplex	1	22-114	Oiler	1
22-44	Shaft, Feed Drive (Spec Bed Length)	1	22-115	Rod, Feed (Spec Bed Length)	1
22-45	Seal, Oil	1	22-116	Stud, Brkt , Swivel (W/O Apron Control)	1
22-46	Cover, Brg	1	22-117	Stud, Brkt , Swivel (W Apron Control)	1
22-47	Key	3	22-118	Bracket, Drive Shaft Support	1
22-48	Stud, Idler	1	22-119	Bracket, Trav Unit	1
22-49	Collar	1	22-120	Box, Back	1
22-50	Washer	1	22-121	Plug	2
22-51	Screw, Hex .Hld Cap	1	22-122	Brktt., Drive Shaft End	1
22-52	Brg , Torrington	.2	22-123	Lug, Stop Collar	1
22-53	Pinion, Feed Drive	1	22-124	Collar, Stop	1
22-54	Seal, Oil	1	22-125	Collar, Soft	2
22-55	Brkt., Bottom Bed Feed	1	22-126	Brkt., Lower	1
22-56	Plate, Top Bed Brktt	1	22-127	Handle, Upper Nut	1
22-57	Brkt., Top Bed Feed	1	22-128	Nut, Upper Half	1
22-58	Link	1	22-129	Nut, Lower Half	1
22-59	Brg	1	22-130	Stud, Nut Swivel	1
22-60	Race, Brg	1	22-131	Rod, Upper Control (Spec Bed Length)	1
22-61	Race, Brg	1	22-132	Cover, Slip Gear	1
22-62	Pilot, Brg Guide	1	22-133	Screws, Binding Hd	6
22-63	Brg., Needle Orange	1	22-134	Screws, Binding Hd	2
22-64	Pin, Straight	1	22-135	Screw, Binding lid	1
22-65	Screw, Lead (Spec Bed Length)	1	22-136	Shaft, Gear	1
22-66	Seal, Oil	1	22-137	Bracket, Switch	1
22-67	Ball	2	22-138	Crank, Shifter	1
22-68	Plunger, Feed Rod Dr Collar	2	22-139	Gear, 32T-16P	1
22-69	Spring, Feed Rod Dr Collar	1	22-140	Gear, 16T-16P	1
22-70	Collar, Feed Drive	1	22-141	Cover, Switch	1

IMPORTANT - Include serial number of your lathe when ordering repair parts.

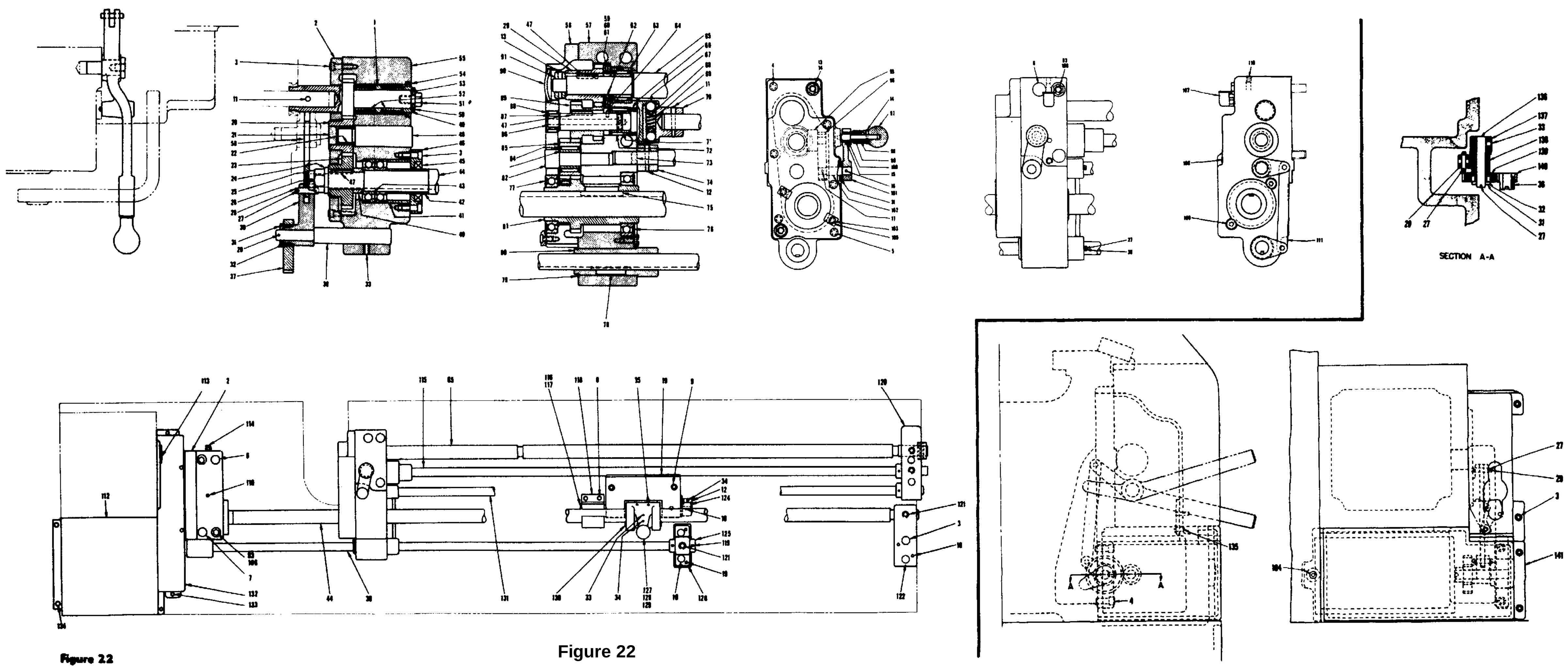


Figure 22

Figure 22

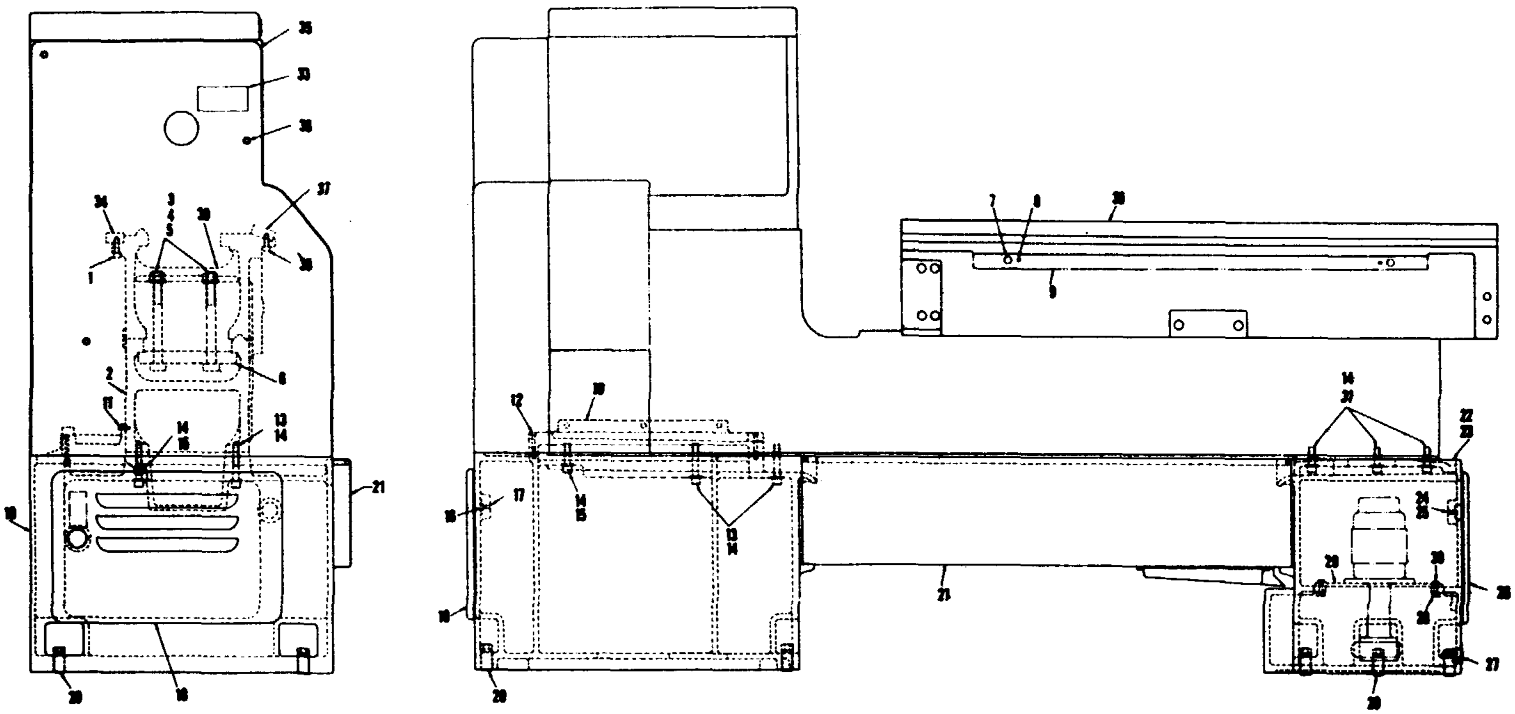


Figure 23

BED, PAN, LEGS & HEAD END COVER
PLAIN & SLIDING BED GAP LATHES

Key No	Part Name	Qty.	Key No	Part Name	Qty.
23-1	Screw, (S. B.G. - Specify Bed Length)..	Var No.	23-20	Screw, Leveling....................................	4
23-2	Bed, Bottom (S. B. G. - Specify Length)	1	23-21	Pan, (Specify Center Capacity)	1
23-2A	Bed, (P. G. G. - Specify Length) Not Shown	1	23-22	Leg, Tail End Cabinet..........................	1
23-3	Bolt, S. B. G.	Var No.	23-23	Screw	4
23-4	Nut, S. B.G.	Var No.	23-24	Magnet, Alnico......................................	1
23-5	Washer, S. B. G.	Var No.	23-25	Screw, Brass Machine Flat Head..........	1
23-6	Clamp, S. B. G..	Var No.	23-26	Door	1
23-7	Screw...	Var No.	23-27	Plug, Pipe...	1
23-8	Pin, Taper..	Var No.	23-28	Clamp, Pump Plate.............................	2
23-9	Rack, Specify Center Capacity............	1	23-29	Plate, Pump..	1
23-10	Cover, Head End Leg..........................	1	23-30	Screw, Hex Head Cap..........................	2
23-11	Screw...	3	23-31	Screw	3
23-12	Screw...	2	23-32	Block, Gap (P. B. G. only) Not Shown ..	1
23-13	Screw...	3	23-33	O Ring Instruction Plate	1
23-14	Washer..	7	23-34	Shear, Rear (Specify Center Capacity).	1
23-15	Screw...	1	23-35	Cover, Feed Gear	1
23-16	Magnet, Alnico Carboloy	1	23-36	Screw, Socket Head Cap	3
23-17	Screw, Brass Machine Flat Head..........	1	23-37	Shear, Front (Specify Center Capacity)	1
23-18	Door	1	23-38	Screw, (S. B.G. - Specify Bed Length)..	Var No.
23-19	Leg, Head End Cabinet.......................	1	23-39	Bed, Top (S.B.G. - Specify Length)	1

IMPORTANT - Include serial number of your lathe when ordering repair parts.

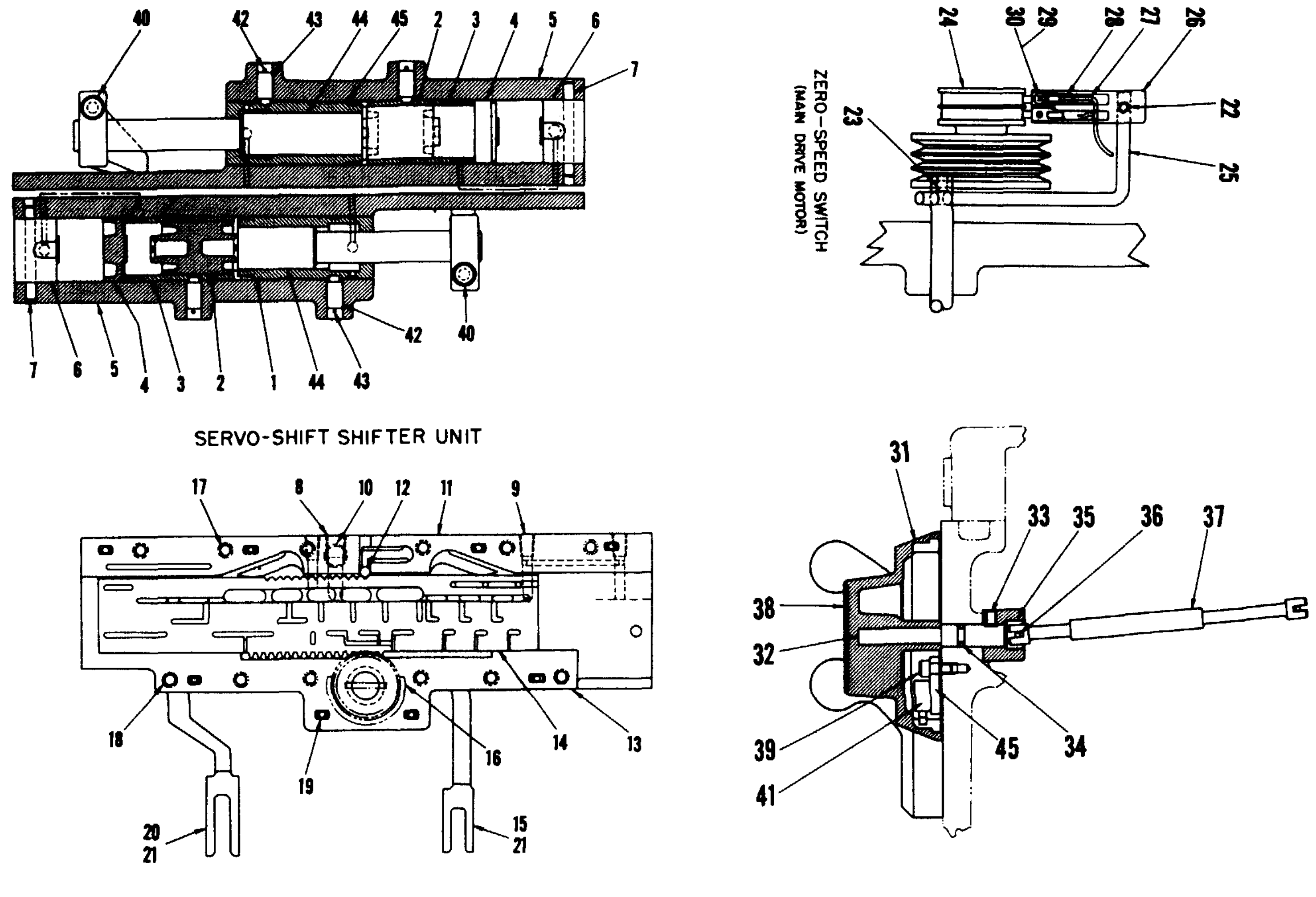
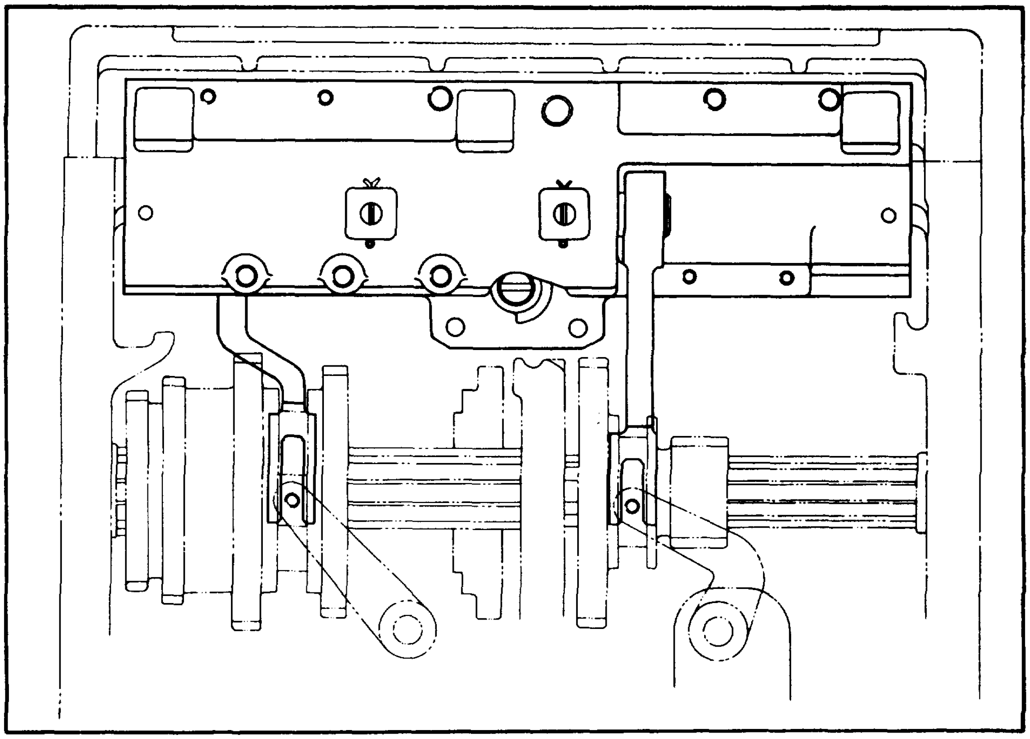


Figure 24

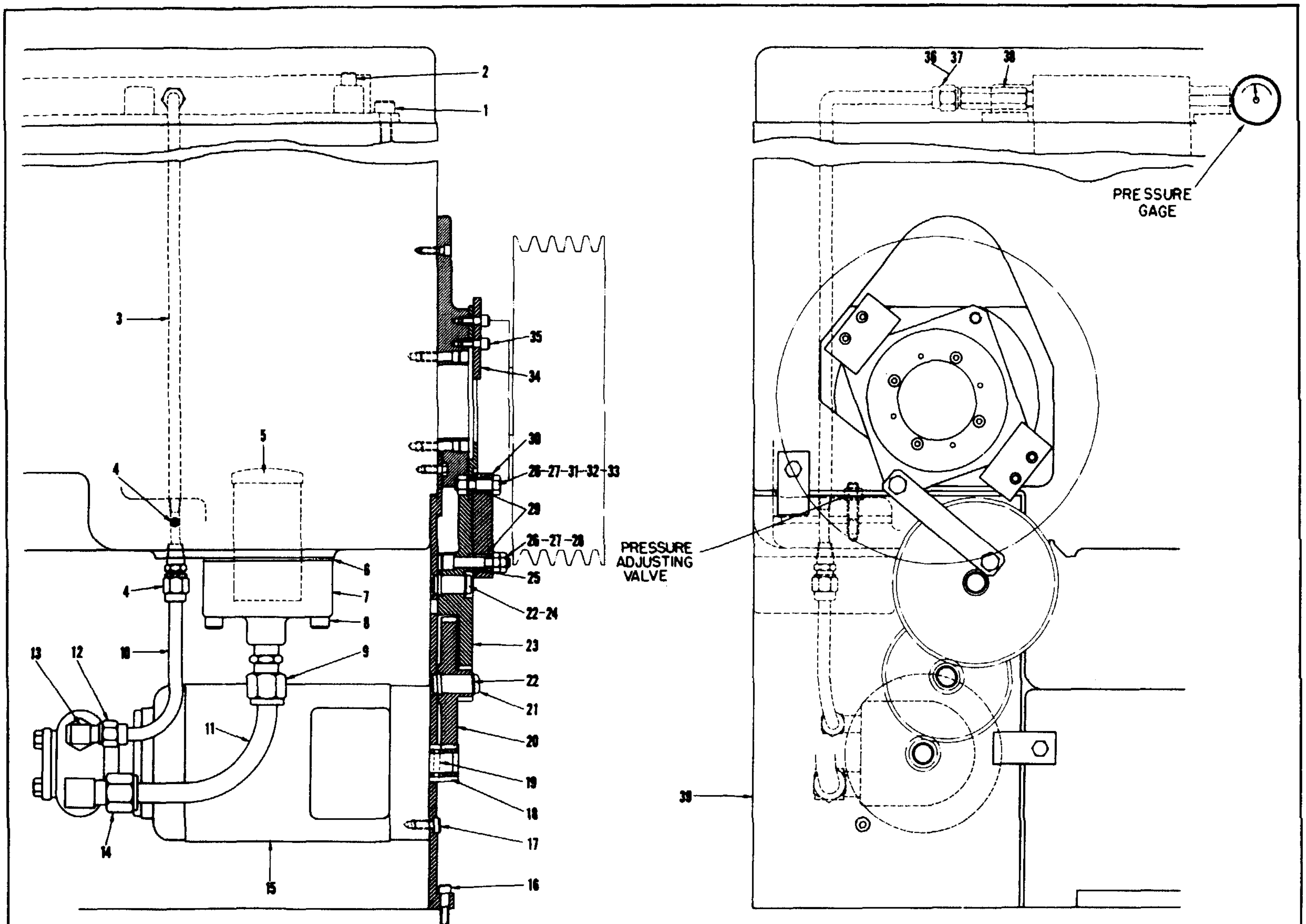
SERVO-SHIFT DIAL ASS'Y



SERVO-SHIFT
ZERO-SPEED SWITCH, SHIFTER UNIT, DIAL ASSEMBLY

Key No	Part Name	Qty.	Key No	Part Name	Qty.
24-1	Sleeve	1	24-24	Switch, Zero Speed	1
24-2	Piston, Long	1	24-25	Arm, Brush Holder.	1
24-3	Liner.	1	24-26	Brush Holder	1
24-4	Piston, Short	1	24-27	Brush Spring	2
24-5	Cylinder	1	24-28	Brush	2
24-6	Retainer	1	24-29	Binding Head Screw	2
24-7	Pin, Oversize Dowel	1	24-30	Shake Proof Washer .	2
24-8	Plug, Pipe	1	24-31	Speed Selector Dial (Specify Speed Range)	1
24-9	Plug, Pipe	3	24-32	Dial Shaft	1
24-10	Plug, Pipe	1	24-33	Set Screw	1
24-11	Spacer, Upper Cylinder	1	24-34	"O" Ring	1
24-12	Roller, Detent	1	24-35	Coupling	1
24-13	Spacer, Lower Cylinder	1	24-36	Pin	1
24-14	Slide, Valve	1	24-37	Coupling Shaft	1
24-15	Fork, "C" Cylinder	1	24-38	Speed Dial	1
24-16	Pinion, Valve Slide (With Pin)	1	24-39	Screw	1
24-17	Screw, Socket Cap	6	24-40	Screw	2
24-10	Screw, Socket Cap	6	24-41	Micro-Switch.	1
24-19	Pin, Straight	2	24-42	Pin, Cotter	2
24-20	Fork, "B" Cylinder	1	24-43	Pin, Locating	2
24-21	Screw, Socket Cap	2	24-44	Piston, Rod	1
24-22	Set Screw	1	24-45	Bracket, Switch.	1
24-23	Set Screw	1			

IMPORTANT - Include serial number of your lathe when ordering repair parts.



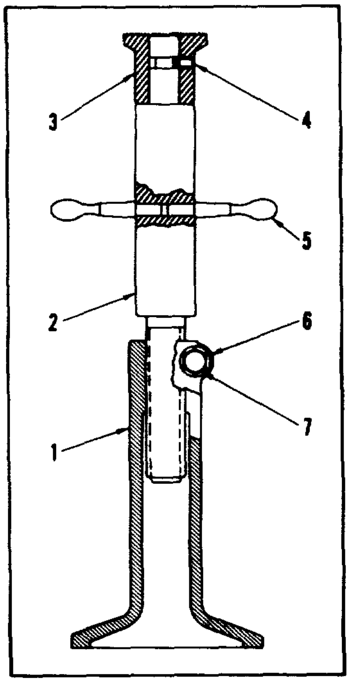
SERVO-SHIFT CRAWL SPEED ROLLOUT & PUMP

Figure 25

SERVO-SHIFT CRAWL SPEED ROLLOUT

Key No	Part Name	Qty.	Key No	Part Name	Qty.
25-1	Screw, Socket Cap	4	25-21	Stud	1
25-2	Screw, Socket Cap	6	25-22	Ring, Snap	2
25-3	Tubing, 3/8" (Cut to Suit)	1	25-23	Gear, Crank Drive	1
25-4	Fitting, Hyd	2	25-24	Stud	1
25-5	Filter	1	25-25	Bushing	1
25-6	Gasket, Filter Cap	1	25-26	Screw, Socket Cap (13" - 15")	1
25-7	Cap, Filter	1	25-27	Nut, Jam	2
25-8	Screw, Socket Cap	2	25-28	Screw, Socket Cap (17" - 19")	1
25-9	Fitting, Hyd	1	25-29	Bushing	2
25-10	Tubing, 3/8" (Cut to Suit)	1	25-30	Arm, Crank	1
25-11	Tubing, 5/8" (Cut to Suit)	1	25-31	Screw, Hex Head	1
25-12	Fitting, Hyd	1	25-32	Nut, Hex	1
25-13	Reducer	1	25-33	Lockwasher	1
25-14	Fitting, Hyd	1	25-34	Plate, Brake Retainer	2
25-15	Motor Driven Pump, Tuthill ILPF Model A	1	25-35	Screw, Socket Cap	4
25-16	Screw, Socket Cap	1	25-36	Nut, Hyd	1
25-17	Screw, Socket Cap	4	25-37	Sleeve, Hyd.	1
25-18	Pinion, Motor	1	25-38	Coupling, Extra long	1
25-19	Pin, Roll	1	25-39	Plate, Head Feed Cover Plate (Specify Engine, Plain Bed, or Sliding Bed Gap)	1
25-20	Gear, Cluster	1			

IMPORTANT - Include serial number of your lathe when ordering repair parts.

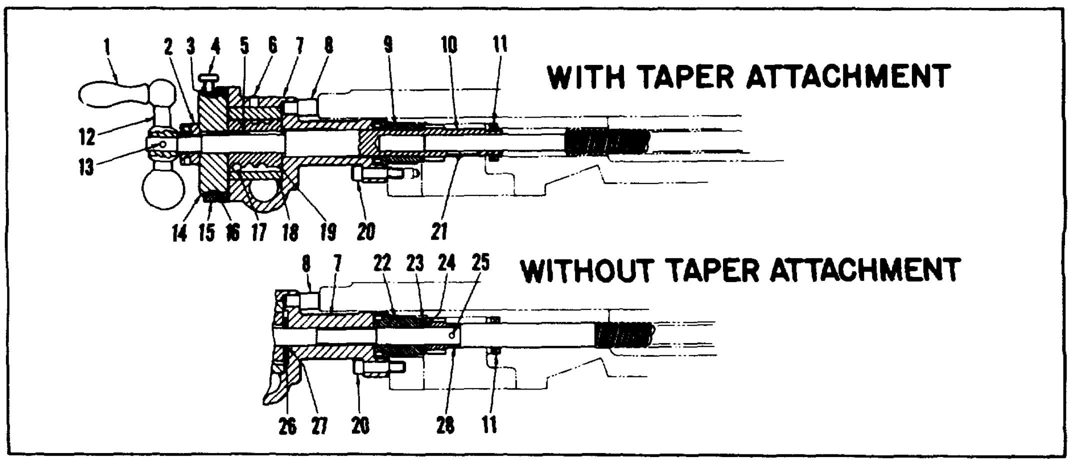


BED JACK UNIT

Sliding Bed Gap lathe Only

Key No	Part Name	Qty.
26-1	Jack Base	1
26-2	Jack Screw............................	1
26-3	Jack Screw Cap	1
26-4	Set Screw	1
26-5	Ball Handle	2
26-6	Washer	1
26-7	Screw	1

IMPORTANT - Include serial number of your lathe when ordering repair parts.



BALL CHASING STOP

Key No	Part Name	Qty.	Key No	Part Name	Qty.
27-1	Ball Handle...	1	27-15	Collar, Graduated	1
27-2	Nut	1	27-16	Spring	1
27-3	Plug	1	27-17	Ball...	1
27-4	Screw	1	27-18	Bush, Cross Stop Friction	1
27-5	Key	1	27-19	Bush, Cross Stop	1
27-6	Oiler	1	27-20	Screw	1
27-7	Bush, Cross Feed	1	27-21	Key...	1
27-8	Pin	1	27-22	Sleeve - Adapter	1
27-9	Sleeve, Adapter	1	27-23	Bearing, Thrust	1
27-10	Sleeve, Cross Feed Pinion	1	27-24	Pilot, Bearing	1
27-11	Seal, Clipper	1	27-25	Pin..	1
27-12	Handle, Crank	1	27-26	Bearing, Thrust...................................	1
27-13	Pin	1	27-27	Pilot, Bearing	1
27-14	Hub, Graduated Collar	1	27-28	Pinion	1

APPENDIX
BASIC ISSUE ITEMS LIST

Section I. PREFACE

1. General
This appendix is a list of basic issue items It is composed of those items which make up the major end item of equipment and the operator's tools, equipment, and repair parts that are issued with the equipment and are required for stockage.

2. Requisition Notes

a. Repair Part Identified by Federal Stock Number.

(1) If the item requisitioned is not furnished, or if other action is necessary, the exact nature of the action taken by the commodity command will be indicated by standard symbols on prescribed forms.

(2) When requisitioning an item, the requesting agency will order the listed item. However, the commodity command will take necessary action to issue the exhaust stock item until stock is exhausted, whether it be an individual item, kit, set, or assembly.

b. Part To Which FSN Has Not Been Assigned. 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:

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

(2) Manufacturer's part number (the number, and sometimes letters, following the colon, (1) above) Dashes, commas, or other marks must be included exactly as listed.

(3) Nomenclature exactly as listed herein, including dimensions if necessary.

(4) Name of manufacturer of end item (from cover of TM or manufacturer's nameplate).

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

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

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

(8) Any other information such as type, frame number, and electrical characteristics, if applicable.

(9) If DD Form 1348 (DOD Single Line Items Requisition System Document (manual)) is used, fill in all blocks except 4, 5, 6, and Remarks field, in accordance with AR 725-50 Complete form as follows:

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

(b) 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.

3. Explanation of Columns

a. Source, Maintenance, and Recoverability Code (col. 1).

(1) Material numerical codes (col. 1a) This column not required.

(2) Source (col. 1b) This column indicates the selection status and source for the listed item Source code used in this list is:

Code	*Explanation*
C	Obtain through local procurement If not obtainable from local procurement, requisition through normal supply channels with a supporting statement of nonavailability from local procurement.

(3) *Maintenance level* (col. 1c) This column indicates the category of maintenance authorized to install the listed item Maintenance level code used in this list is:

Code	*Explanation*
O/C	Operator or crew maintenance

(4) *Recoverability* (col. 1d) This column indicates whether unserviceable items should be returned for recovery or salvage. When no code When no code is indicated, the item will be considered expendable. Recoverability code used in this list 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 (col. 2) This column indicates the Federal stock number which has been assigned by the Cataloging Division, Defense Logistics Services Center.

c. Description (col. 3) This column indicates the Federal item name (shown in capital letters) and any additional description required for supply operations The manufacturer's code and part number are also included for reference.

Code	*Explanation*
03914	Armstrong Bros. Tool Company
13130	Cleveland Twist Drill Company
15567	Cushman Chuck Company
35377	LeBlond, R.K., Machine Tool Company
50038	Ready Tool Company
61463	United States Rubber Company
61691	Union Manufacturing Company
75078	Jacobs Mfg Company, The
90045	William, J.H., and Company
95571	Buck Tool Company

d. Unit of Issue (col. 4) This column indicates the quantity to be requisitioned.

e. Quantity Authorized (col. 5) This column indicates the quantity of the listed item authorized for stockage to constitute the prescribed load.

f. Illustration (col. 6) This column indicates the figure number of the illustration that depicts the listed item When more than one item appears on an illustration, the item number is also indicated.

4. Abbreviations

adi	adjust(able)(ing)
amy	assembly(ies)
brg	bearing(s)
Bros	Brothers
cap	capacity
circ	circumference
deg	degree(s)
flex	flexible
h	high, height
hd	head
hdl	handle(d)(s)
hdls	headless
Ih	left hand
med	medium
o/a	overall
rd	round
rect	rectangular
rh	right hand
ru	rubber
S	steel
shk	shank
std	standard
stght	straight
tapd	tapered
TPI	threads per inch
w/	with
w/o	without

5. Suggestions and Recommendations

The direct reporting by the individual user, of errors, omissions, and recommendations for improving this manual is authorized and encouraged. DA Form 2028 (Recommended Changes to DA Publications) will be used for reporting these improvements This form may be completed using pencil, pen or typewriter DA Form 2028 will be completed and forwarded direct to: Commanding General, Headquarters, U.S. Army Weapons Command, ATTN: AMSWE-SMM-P, Rock Island Arsenal, Rock Island, Ill. 61202.

Section II. BASIC ISSUE ITEMS

(1) Source, Maintenance, and Recoverability Code (a) Materiel-Code	(b) Source	(c) Mainten-ance level	(d) Recover-ability	(2) Federal stock No.	(3) Description	(4) Unit of issue	(5) Quantity author-ized	(6) Illustration (a) Figure No.	(b) Item No.
					MAJOR COMBINATIONS				
					The following items are to be requisitioned for initial issue only.				
			R	3416-725-3508	LATHE, ENGINE: sliding bed gap (35377: model 17/28” Regal)	ea	-	28 thru 31 and 38	-
			R	3416-828-3714	LATHE, ENGINE: plain bed gap (35377: model 17” Regal)	ea	-	32 thru 39	-
					COMPONENTS OF MAJOR COMBINATION None authorized				
					REPAIR PARTS FOR: LATHE, ENGINE: sliding bed gap (35377:model 17/28” Regal) (3416-725-3508)				
	C	O/C	-	-	BELT, TIMING: headstock (61463:300H-150)	ea	1	31	1
	C	O/C	-	-	BELT, V: rubberized fabric, 87.2 in outside circ, 1/2 in top w, 11/32 in thk (set of 5 matched) (61463:A85).	set	1	31	2
	C	O/C	-	-	HANDLE, FEED: shifter (short) (35377:B-9C-253-S).	ea	1	31	11
	C	O/C	-	-	HANDLE, SPEED: shifter (long) (35387:D-9C-248-S).	ea	1	21	12
					REPAIR PARTS FOR: LATHE, ENGINE: plain bed gap (35377:model 17' Regal) (3416-828-3714)				
					None authorized				
					TOOLS AND EQUIPMENT FOR: LATHE, ENGINE: sliding bed gap (35377:model 17/28” Regal) (3416-725-3508)				
	C	O/C	-	-	ATTACHMENT, TAPER: lathe telescopic, ea 3 1/2 in max included taper per foot, 15 in lg at one setting (35377:D-76B-U).	1	29	2	
	C	O/C	-	-	BOX,ACCESSORY,METAL:12x19A;x24Y4 ea (35377:for 17/28”' Regal).	1	-		
	C	O/C	-	-	BOX, COLLET: (for Jacobs No J-910 through J-914 collets) (75078:CB1).	ea	1	38	19

Section II. BASIC ISSUE ITEMS

(1) Source, Maintenance, and Recoverability Code (a) Materiel Code	(b) Source	(c) Maintenance level	(d) Recoverability	(2) Federal stock No.	(3) Description	(4) Unit of issue	(5) Quantity authorized	(6) Illustration (a) Figure No.	(b) Item No.
					LATHE, ENGINE: sliding bed gap (35377:model 17/28" Regal) (3416-725-3508)-Continued				
	C	O/C	-	-	BOX, COLLET: (for Jacobs No J-915 through J-920 collets) (75078:CB2).	ea	1	38	1
	C	O/C	-	3460-373-1145	CENTER, LATHE: tail and headstock, Morse No 4 taper.	ea	2	29	1
	C	O/C	-	-	CENTER, LATHE: pipe, ball bearing, Morse No 4 taper (50038:LP-7).	ea	1	31	13
	C	O/C	-	-	CENTER, LATHE: revolving, tailstock (50038: R-4).	ea	1	31	14
	C	O/C	-	-	CHUCK, COLLET, LATHE: spindle nose, 1/16-1 3/8 in cap (75078:91-TI).	ea	1	38	11
	C	O/C	-	-	CHUCK, INDEPENDENT JAW: 12 in., 4 solid one piece reversible jaws, w/chuck wrench, for L1 spindle nose (15567:12214CE5).	ea	1	30	6
	C	O/C	-	-	CHUCK, UNIVERSAL JAW: 8 in., 3-two piece tops reversible jaws, w/chuck wrench, for L1 spindle nose (15567:8236E5).	ea	1	30	5
					CHUCK, DRILL: w/arbor and key:	-	-	30	2
	C	O/C	-	3460-268 9516	ARBOR, DRILL CHUCK: Morse No 4 taper shk, tang end shk, 0.811 large chuck end dia., 0.746 small chuck end dia, 1.218 taper lg.	ea	1	30	2C
	C	O/C	-	3460-231-2256	CHUCK, DRILL: 3 jaw key type, ball brg type, med-duty, Jacobs No 3 taper shank, 0 to 1/2 cap., w/o arbor.	ea	1	30	2A
	C	O/C	-	3460-264-5580	KEY, DRILL CHUCK: Jacobs design, No. K3 key.	ea	1	30	2B
	C	O/C	-	3460-378-3800	COLLET: machine, flex., ru boned jaws, tapd, 1/16 to 1/8 cap (75078:J-910).	ea	1	38	12
	C	O/C	-	3460-378-3801	COLLET: machine, flex., ru boned jaws, tapd, 1/8 to 1/4 cap (75078:J-911).	ea	1	38	17
	C	O/C	-	3460-378 3802	COLLET: machine, flex., ru boned jaws, tapd, 1/4 to 3/8 cap (75078:J-912).	ea	1	38	18
	C	O/C	-	3460-378-3803	COLLET: machine, flex., ru boned jaws, tapd, 3/8 to 1/2 cap (75078:J-913).	ea	1	38	13
	C	O/C	-	3460-378-3804	COLLET: machine, flex., ru boned jaws, taps, 1/2 to 5/8 cap (75078:J-914).	ea	1	38	16
	C	O/C	-	3460-378 3805	COLLET: machine, flex., ru boned jaws, 5/8 to 3/4 cap (75078:J-915).	ea	1	38	2
	C	O/C	-	3460-378-3806	COLLET: machine, flex., ru boned jaws, 3/4 to 7/8 cap (75078:J-916).	ea	1	38	9
	C	O/C	-	3460-378-3807	COLLET: machine, flex., ru boned jaws, 7/8 to 1 cap (75078:J-917).	ea	1	38	10
	C	O/C	-	3460-378-3808	COLLET: machine, flex., ru boned jaws, 1 to 1 1/8 cap (75078:J-918).	ea	1	38	3
	C	O/C	-	3460-378-3809	COLLET: machine, flex., ru boned jaws, 1 1/8 to 1 1/4 cap (75078:J-919).	ea	1	38	7
	C	O/C	-	3460-378-3810	COLLET: machine, flex., ru boned jaws, 1 1/4 to 1 3/8 cap (75078:J-920).	ea	1	38	8
	C	O/C	-	-	DIAL, THREAD INDICATING: w/instructions plate (35377:D-98B-10-U).	ea	1	28	6

Section II. BASIC ISSUE ITEMS

(1) Source, Maintenance, and Recoverability Code (a) Materiel Code	(b) Source	(c) Maintenance level	(d) Recoverability	(2) Federal stock No.	(3) Description	(4) Unit of issue	(5) Quantity authorized	(6) Illustration (a) Figure No.	(b) Item No.
					LATHE, ENGINE: sliding bed gap (35377:model 17/28" Regal) (3416-725-3508)-Continued				
	C	O/C	-	3460-243-1955	DOG, LATHE: bent tail type, hdls sgle screw type, 1/2 cap.	ea	1	31	22
	C	O/C	-	3460-243-1957	DOG, LATHE: bent tail type, hdls sgle screw type, 1 cap.	ea	1	31	21
	C	O/C	-	3460-243-1958	DOG, LATHE: bent tail type, hdls sgle screw type, 1 1/2 cap.	ea	1	31	20
	C	O/C	-	3460-187-2211	DOG, LATHE: bent tail type, hdls sgle screw type, 2 cap.	ea	1	31	19
	C	O/C	-	3460-187-2213	DOG, LATHE: bent tail type, hdls sgle screw type, 3 cap.	ea	1	31	18
	C	O/C	-	3460-187-2215	DOG, LATHE: bent tail type, hdls sgle screw type, 4 cap.	ea	1	31	17
	C	O/C	-	3460-187-2216	DOG, LATHE: clamp bent tail type, sq hd dble screw type, 1 3/ 4 cap.	ea	1	31	23
	C	O/C	-	3460-187-2218	DOG, LATHE: clamp bent tail type, sq hd dble screw type 3 1/2 cap.	ea	1	31	24
	C	O/C	-	-	GEAR, QUADRANT: 27 tooth, for cutting 27 TPI (35377:D-99B-12-S).	ea	1	31	15
	C	O/C	-	3460-234-2353	HOLDER, CUTTING TOOL: boring type, stght, 5/8 shk w, 1 3/8 shk h, 4 1/8 shk lg, rd boring bar 15/16 dia, w/accessories.	ea	1	31	3
	C	O/C	-	3460-517-5372	HOLDER, CUTTING TOOL: cutting-off type, rh offset, 5/8 shk w, 1 3/8 shk h, 4 shk lg, rect cutter bit 7/8 w, 1/8 thk, w/wrench.	ea	1	31	10
	C	O/C	-	-	HOLDER, CUTTING TOOL: cutting-off type, stght, 5/8 shk w, 1-3/8 shk h, 7 shk lg, rect cutter bit 7/8 w, 1/8 thk, w/wrench (03914:22).	ea	1	31	8
	C	O/C	-	-	HOLDER, CUTTING TOOL: thd type, rh off-set, 5/8 shk w, 1-3/8 shk h, 7 shk lg, w cutter/bit and wrench (03914:52).	ea	1	31	4
	C	O/C	-	-	HOLDER, CUTTING TOOL: turning type, lh offset, 5/8 shk w, 1 3/8 shk h, 7 shk lg, 3/8 sq cutter w, w/wrench (03914:2L).	ea	1	31	7
	C	O/C	-	3460-232-9714	HOLDER, CUTTING TOOL: turning type, rh offset 5/8 shk w, 1 3/8 shk h, 7 shk lg, 3/8 sq cutting w, w/cutter bit and wrench.	ea	1	31	5
	C	O/C	-	-	HOLDER, CUTTING TOOL: turning type, stght, 5/8 shk w, 1 3/8 shk h, 7 shk lg, 3/8 sq cutter w, w/wrench (03914:2S).	ea	1	31	6
	C	O/C	-	-	JAWS, FACE PLATE: single ribbed, semi-steel body, w/wrench (15567:416C).	ea	4	30	16
	C	O/C	-	5120-224-4659	KEY, SOCKET HEAD SCREW: hex type, L-type hdl, 1/4 in w across flats, 3 5/32-3 11/32 in. min to max arm lg.	ea	1	30	11
	C	O/C	-	5120-240-5274	KEY, SOCKET HEAD SCREW: hex type, L-type hdl, 5/16 in w across flats, 3 21/32-3 27/32 in. min to max arm lg.	ea	1	30	12
	C	O/C	-	5120-198-5391	KEY, SOCKET HEAD SCREW: hex type, L-type hdl, 1/2 in w across flats, 5 5/32-5 11/32 in. min to max arm lg.	ea	1	30	13

Section II. BASIC ISSUE ITEMS

(1) Source, Maintenance, and Recoverability Code (a) Materiel-Code	(b) Source	(c) Mainten-ance level	(d) Recover-ability	(2) Federal stock No.	(3) Description	(4) Unit of issue	(5) Quantity author-ized	(6) Illustration (a) Figure No.	(b) Item No.
					LATHE, ENGINE: sliding bed gap (35377:model 17/28" Regal) (3416-725-3508)-Continued				
	C	O/C	-	5120-240-5268	KEY, SOCKET HEAD SCREW: hex type, L-type hdl, 9/16 in w across flats, 5-21/32-5-27/32 in. min to max arm lg.	ea	1	30	14
	C	O/C	-	5120-224-2510	KEY, SOCKET HEAD SCREW: hex type, L type hdl, 5/8 in w across flats, 6-5/32-6-11/32 in. min to max arm lg.	ea	1	30	15
	C	O/C	-	3455-250-2593	KNURLING TOOL, SELF-CENTERING LATHE: 5/8 revolving hd, 5/8 shk w, 1-3/8 shk h, 7-1/2 shk lg, coarse, fine and med diamond knurl, 3/4 od, 3/8 roll w, 1/4 pin hole dia, 1/4 knurling face w, 1/4 knurling cap	ea	1	31	9
	C	O/C	-	-	PLATE, FACE: large, 24 in dia (35377:H-9A-26/A)	ea	1	30	1
	C	O/C	-	-	PLATE, FACE: small, 9 1/2 in dia (35377:NB-10B-10/A)	ea	1	29	3
	C	O/C	-	-	PLUG, RUBBER, MACHINE COLLET: (for Jacobs J-910, J-911, and J-912 collets) (75078:CP012).	ea	1	38	14
	C	O/C	-	-	PLUG, RUBBER, MACHINE COLLET: (for Jacobs J-913 and J-914 collets) (75078:CP-913-CP914).	ea	1	38	15
	C	O/C	-	-	PLUG, RUBBER, MACHINE COLLET: (for Jacobs J-915 and J-916 collets) (75078:CP-915-CP916).	ea	1	38	6
	C	O/C	-	-	PLUG, RUBBER, MACHINE COLLET: (for Jacobs J-917 and J-918 collets) (75078:CP-917-CP918).	ea	1	38	4
	C	O/C	-	-	PLUG, RUBBER, MACHINE COLLET: (for Jacobs J-919 and J-920 collets) (75078:CP-919-CP920),	ea	1	38	5
	C	O/C	-	-	POST, TOOL: No 1, assy (35377:D-45A-19S)	ea	1	28	3
	C	O/C	-	-	REST, FOLLOW: bronze tip jaws, iron body, 1/2 to 3-1/4 in cap (35377:D-53B-PL-U).	ea	1	28	4
	C	O/C	-	-	REST, STEADY: bronze tip jaws, iron body, 1/2 to 6 in cap (35377:D-51B-PL-U).	ea	1	28	5
	C	O/C	-	3460-227-7500	SOCKET, TAPER SHANK TOOL: reducing type, designed for std shk, Morse No 4 taper shk, Morse No 3 inside taper, 5-3/8 o/a lg.	ea	1	31	16
	C	O/C	-	-	STOP, CARRIAGE: micrometer, assy (35377: D-138B-U).	ea	1	28	1
	C	O/C	-	-	STOP, THREAD CUTTING: adj, assy (35377: D-45B-19U).	ea	1	28	2
	C	O/C	-	5120-542-2026	WRENCH, BOX: stght, sgle-hd type, 5/8 sq opng, 7 in o/a lg.	ea	1	30	7
	C	O/C	-	5120-555-0205	WRENCH, OPEN END, FIXED: dble-hd type, 15 deg angle of hd, 1/2 and 5/8 opngs, 1/4 hd thk, 6-5/8 in o/a lg.	ea	1	30	8
	C	O/C	-	5120-187-7126	WRENCH, OPEN END, FIXED: dble-hd type, 15 deg angle of hd, 9/16 and 5/8 opngs, 19/64 bd thk, 6-3/8o/a lg.	ea	1	30	9

Section II. BASIC ISSUE ITEMS

(1) Source, Maintenance, and Recoverability Code (a) Materiel-Code	(b) Source	(c) Mainten-ance level	(d) Recover-ability	(2) Federal stock No.	(3) Description	(4) Unit of issue	(5) Quantity author-ized	(6) Illustration (a) Figure No.	(b) Item No.
					LATHE, ENGINE: sliding bed gap (35377:model 17/285 Regal) (3416-725-3508)-Continued				
	C	O/C	O	5120-187-7129	WRENCH, OPEN END FIXED: dble-hd type, ea 15 deg angle of hd, 3/4 and 13/16 opngs, 3/8 hd thk, 8 o/a lg.	1	30	10	
	C	O/C	-	5120-316-9216	WRENCH, SPANNER: hook type, 5 1/2 in ea opngs (35377:DR55).	1	30	4	
	C	O/C	-	-	WRENCH, T-HANDLE: socket, hex opngs, ea 1-1/8 in across flats (90045:971D).	1	30	3	
					TOOLS AND EQUIPMENT FOR: LATHE, ENGINE: plain bed gap (35377:model 17" Regal) (3416-828-3714)				
	C	O/C	-	-	ADAPTER, HEADSTOCK: lathe (35377:D96-230SU)	ea	1	33	5
	C	O/C	-	-	ADAPTER, TAILSTOCK: lathe (35377:D25B-30SU)	ea	1	33	6
	C	O/C	-	3460-516-3641	ARBOR, DRILL CHUCK: Morse No 4 taper shk, tang end shk, 1.125 large chuck end dia., 1.045 small chuck end dia, 1 11/16 taper lg.	ea	1	33	1
	C	O/C	-	-	BOX, COLLET: (for Jacobs No J-910 through J-914 collets) (75078:CB1).	ea	1	38	19
	C	O/C	-	-	BOX, COLLET: (for Jacobs No J -915 through J-920 collets) (75078:CB2).	ea	1	38	1
	C	O/C	-	3460-373-1145	CENTER, LATHE: tail and headstock, Morse No. 4 taper.	ea	1	33	7
	C	O/C	-	-	CHUCK, COLLET, LATHE: spindle nose, 1/16- 1-3/8 in cap (75078:91-T1).	ea	1	38	11
					CHUCK, DRILL: w/key:			34	5
	C	O/C	-	-	CHUCK, DRILL: 3 jaw key type, ball brg type, hv-duty, Jacobs No 4 taper shank, 1/8 to 3/4 cap (75078:18N).	ea	1	34	5A
	C	O/C	-	3460-144-2049	KEY, DRILL CHUCK: Jacobs design, S, No. 5 key.	ea	1	34	5B
	C	O/C	-	-	CHUCK, INDEPENDENT JAW: 6 in 4 jaws, w/chuck key and T1035 adapter, for 1-1/2 - 8 TPI spindle (95571:1164).	ea	1	34	1
	C	O/C	-	-	CHUCK, INDEPENDENT JAW: 10 in., 4 jaws, w/chuck key, for direct mounting on L-1 spindle nose (61691:51810L1).	ea	1	34	4
	C	O/C	-	-	CHUCK, UNIVERSAL JAW: 5 in., 3 jaws, w/set of inside and outside jaws, w/chuck key and T928 adapter, for 1-1/2-8 TPI spindle (95571:2534).	ea	1	34	3
	C	O/C	-	-	CHUCK, UNIVERSAL JAW: 8 in., 3 jaws, w/set of of inside and outside jaws, w/chuck key, for direct mounting on L-1 spindle nose (61691:16308L1).	ea	1	34	2
	C	O/C	-	3460-378-3800	COLLET: machine, flex., ru boned jaws, tapd, 1/16 to 1/8 cap (75078:J-910).	ea	1	38	12

Section II. BASIC ISSUE ITEMS

(1) Source, Maintenance, and Recoverability Code (a) Materiel Code	(b) Source	(c) Mainten-ance level	(d) Recover-ability	(2) Federal stock No.	(3) Description	(4) Unit of issue	(5) Quantity author-ized	(6) Illustration (a) Figure No.	(b) Item No.
					LATHE, ENGINE: plain bed gap (35377:model 17" Regal) (3416-828-3714) -Continued				
	C	O/C	-	3460-378-3801	COLLET: machine, flex., ru boned jaws, tapd, 1/8 to 1/4 cap (75078:J-911).	ea	1	38	17
	C	O/C	-	3460-378-3802	COLLET: machine, flex., ru boned jaws, tapd, 1/4 to 3/8 cap (75078:J-912).	ea	1	38	18
	C	O/C		-3460-378-3803	COLLET: machine, flex., ru boned jaws, tapd, 3/8 to 1/ cap (75078:J-913).	ea	1	38	13
	C	O/C		-3460-378-3804	COLLET: machine, flex., ru boned jaws, tapd, 1/2 to 5/8 cap (75078:J-914).	ea	1	38	16
	C	O/C		-3460-378-3805	COLLET: machine, flex., ru boned jaws, 5/8 to 3/4 cap. (75078:J-915).	ea	1	38	2
	C	O/C		-3460-378-3806	COLLET: machine, flex., ru boned jaws, 3/4 to 7/8 cap (75078:J-916).	ea	1	38	9
	C	O/C	-	3460-378-3807	COLLET: machine, flex., ru boned jaws, 7/8 to 1 cap. (75078:J-917).	ea	1	38	10
	C	O/C	-	3460-378-3808	COLLET: machine, flex., ru boned jaws, 1 to 1-1/8 cap (75078:J-918).	ea	1	38	3
	C	O/C	-	3460-378-3809	COLLET: machine, flex., ru boned jaws, 1-1/8 to 1-1/4 cap (75078:J-919).	ea	1	38	7
	C	O/C	-	3460-378-3810	COLLET: machine, flex., ru boned jaws, 1-1/4 to 1-3/8 cap (75078:J-920).	ea	1	38	8
	C	O/C	-	-	COVER, LATHE: canvas, 10 oz (35377:for 17" Regal plain bed gap).	ea	1	37	-
	C	O/C	-	-	DIAL, CHASING: w/instruction plate (35377: D-98B-10-U).	ea	1	32	5
	C	O/C	-	3460-243-1955	DOG, LATHE: bent tail type, hdls sgle screw type, 1/2 cap.	ea	1	33	9
	C	O/C	-	3460-248-9874	DOG, LATHE: bent tail type, hdls sgle screw type, 1-1/4 cap.	ea	1	33	8
	C	O/C	-	-	DOG, LATHE: reversible type, 3 to 6 cap (50038:E-505).	ea	1	33	10
	C	O/C	-	-	DRIFT, DRILL: taper shank tool socket (13130: 105-No 1).	ea	1	33	11
	C	O/C	-	-	DRIFT, DRILL: taper shank tool socket (13130: 105-No 2).	ea	1	33	12
	C	O/C	-	-	DRIFT, DRILL: taper shank tool socket (13130: 105-No 3).	ea	1	33	13
	C	O/C	-	-	GEAR SET, METRIC TRANSPOSING: w/instruction chart (35377:D-99B-E) c/o 1 each of the following:	ea	1	39	-
					BAG, GEAR: canvas, 10 oz duck			39	8
					COLLAR: metric transposing gear			39	9
					GEAR, SPUR: 27 teeth			39	1
					GEAR, SPUR: 33 teeth			39	2
					GEAR, SPUR: 39 teeth			39	3
					GEAR, SPUR: 42 teeth			39	4
					GEAR, SPUR: 45 teeth			39	5
					GEAR, SPUR: 48 teeth			39	6
					GEAR, SPUR: 2 gear, 118 and 130 teeth			39	7

Section II. BASIC ISSUE ITEMS

(1) Source, Maintenance, and Recoverability Code (a) Materiel-Code	(b) Source	(c) Mainten-ance level	(d) Recover-ability	(2) Federal stock No.	(3) Description	(4) Unit of issue	(5) Quantity author-ized	(6) Illustration (a) Figure No.	(b) Item No.
					LATHE, ENGINE: plain bed gap (35377:model 17" Regal) (3416-828-3714) -Continued				
	C	O/C	-	-	HOLDER, CUTTING TOOL: boring type, including 1 ea 1/2, 3/4, and 1-1/8 boring bars w/1 ea 30 deg. 45 deg. and 90 deg end caps, 3 ea 3/16, 1/4, and 1/8 sq cutter bits, and 1 wrench (03914:1B).	ea	1	36	-
	C	O/C	-	-	HOLDER, CUTTING TOOL: boring type, reversible, rh or lh turning, 5/8 shk w, 1-1/4 shk h, w/ 1/4 and 3/8 boring bars, 1 high speed cutter bit and 1 wrench (03914:17).	ea	1	35	7
	C	O/C	-	3460-517-5372	HOLDER, CUTTING TOOL: cutting off type, rh offset, 5/8 shk w, 1-3/8 shk h, 4 shk lg, rect cutter bit 7/8 w, 1/8 thk, w/wrench.	ea	1	35	1
	C	O/C	-	-	HOLDER, CUTTING TOOL: thd type, rh offset, 5/8 shk w, 1-3/8 shk h, 7 shk lg, w/cutter bit and wrench (03914:52).	ea	1	35	4
	C	O/C	-	-	HOLDER, CUTTING TOOL: turning type, lh offset, 5/8 shk w, 1-3/8 shk h, 7 shk lg, 3/8 sq cutter w, w/cutter bit and wrench (03914:2L).	ea	1	35	3
	C	O/C	-	3460-232-9714	HOLDER, CUTTING TOOL: turning type, rh offset, 5/8 shk w, 1-3/8 shk h, 7 shk lg, 3/8 sq cutting w, w/cutter bit and wrench.	ea	1	35	5
	C	O/C	-	-	HOLDER, CUTTING TOOL: turning type, stght. 5/8 shk w, 1-3/8 h, 7 shk lg, 3/8 sq cutter w, w/cutter bit and wrench (03914:2S).	ea	1	35	2
	C	O/C	-	-	JAWS, FACE PLATE: S, 6 in., set of 4 (15567:6216C)	ea	1	32	3
	C	O/C	-	3455-250-2593	KNURLING TOOL, SELF-CENTERING LATHE: 3/8 revolving hd, 5/8 shk w, 1-3/8 shk h, 7-1/2 shk lg, coarse, fine and med diamond knurl, 3/4 od, 3/8 roll w, 1/4 pin hole dia, 1/4 knurling face w, 1/4 knurling cap.	ea	1	35	6
	C	O/C	-	-	PLATE, FACE: large, 24 in dia (35377:H-9A-26/A)	ea	1	32	2
	C	O/C	-	-	PLUG, RUBBER, MACHINE COLLET: (for Jacobs J-910, J-911, and J-912 collets) (75078:CP012).	ea	1	38	14
	C	O/C	-	-	PLUG, RUBBER, MACHINE COLLET: (for Jacobs J-913 and J-914 collets) (75078:CP913-CP914).	ea	1	38	15
	C	O/C	-	-	PLUG, RUBBER MACHINE COLLET: (for Jacobs J-915 and J-916 collets) (75078:CP915-CP916).	ea	1	38	6
	C	O/C	-	-	PLUG, RUBBER, MACHINE COLLET: (for Jacobs J-917 and J-918 collets) (75078:CP917-CP918).	ea	1	38	4
	C	O/C	-	-	PLUG, RUBBER, MACHINE COLLET: (for Jacobs J-919 and J-920 collets) (75078:CP919-CP920).	ea	1	38	5
	C	O/C	-	-	REST, STEADY: w/roller jaws, iron body, 1/2 to 6 in. cap (35377:D-51B-R-U/1).	ea	1	32	4

Section II. BASIC ISSUE ITEMS

(1) Source, Maintenance, and Recoverability Code				(2)	(3)	(4)	(5)	(6) Illustration	
(a) Materiel-Code	(b) Source	(c) Mainten-ance level	(d) Recover-ability	Federal stock No.	Description	Unit of issue	Quantity author-ized	(a) Figure No.	(b) Item No.
					LATHE, ENGINE: plain bed gap (35377:model 17" Regal) (3416-828-3714) -Continued				
	C	O/C	-	3460-227-7511	SOCKET, TAPER SHANK TOOL: extension reducing type, designed for std shk, Morse No. 4 taper shk, Morse No 3 inside taper, 8-3/4 to 10 o/a lg.	ea	1	33	4
	C	O/C	-	3460-224-8643	SOCKET, TAPER SHANK TOOL: reducing type, designed for broken shk, Morse No 4 taper shk, Morse No 2 inside taper, 4-15/16 o/a lg.	ea	1	33	3
	C	O/C	-	3460-232-8118	SOCKET, TAPER SHANK TOOL: reducing type, designed for std shk, Morse No 4 taper shk, Morse No 1 inside taper, 4-7/8 o/a lg.	ea	1	33	2
	C	O/C	-	-	STOP, CARRIAGE: micrometer, assy (35377: D-138B-U).	ea	1	32	1

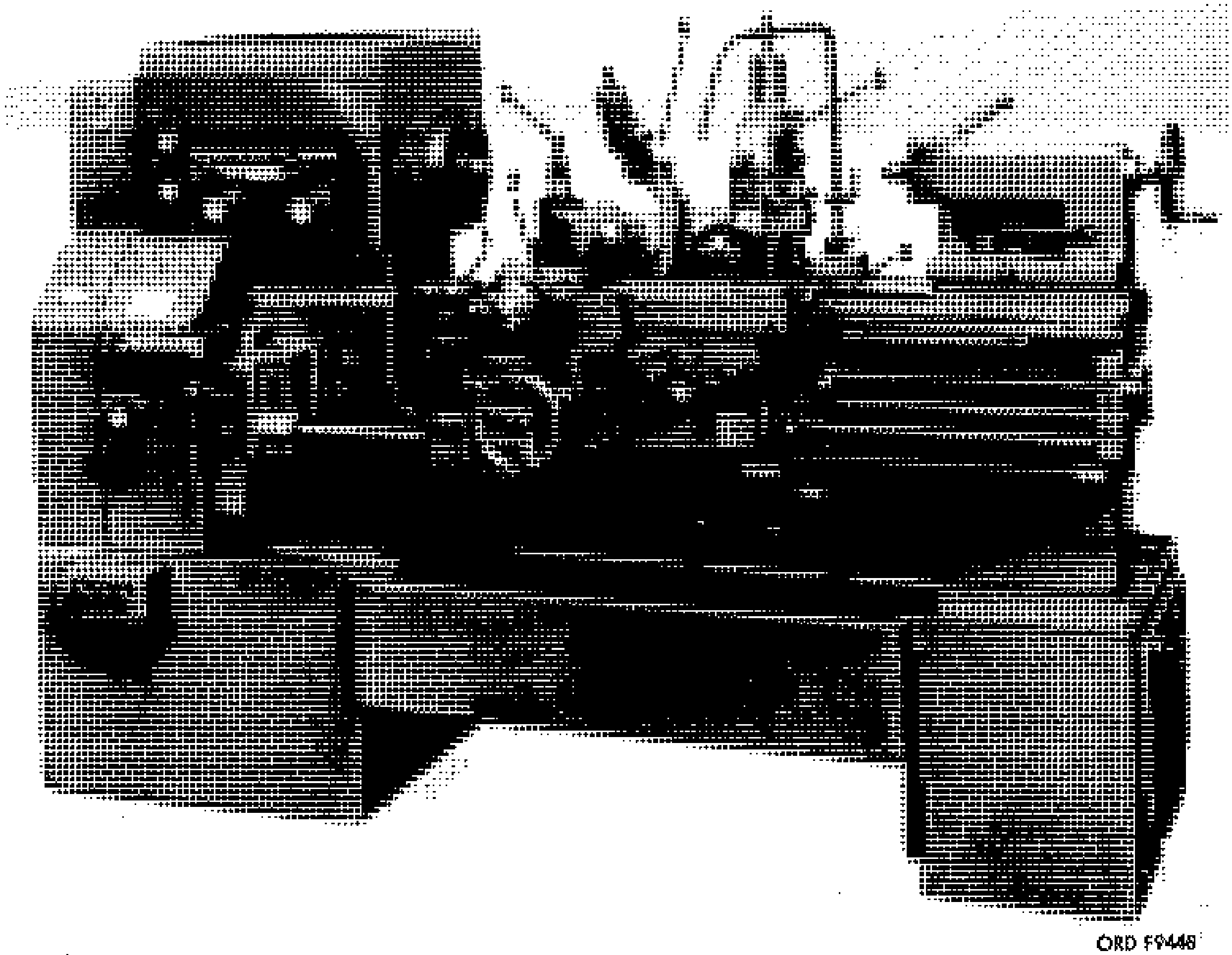


Figure 28. Sliding bed gap engine lathe w/attached equipment (35377:modet 17/28" Regal) (3416-725-3508)-right front view.

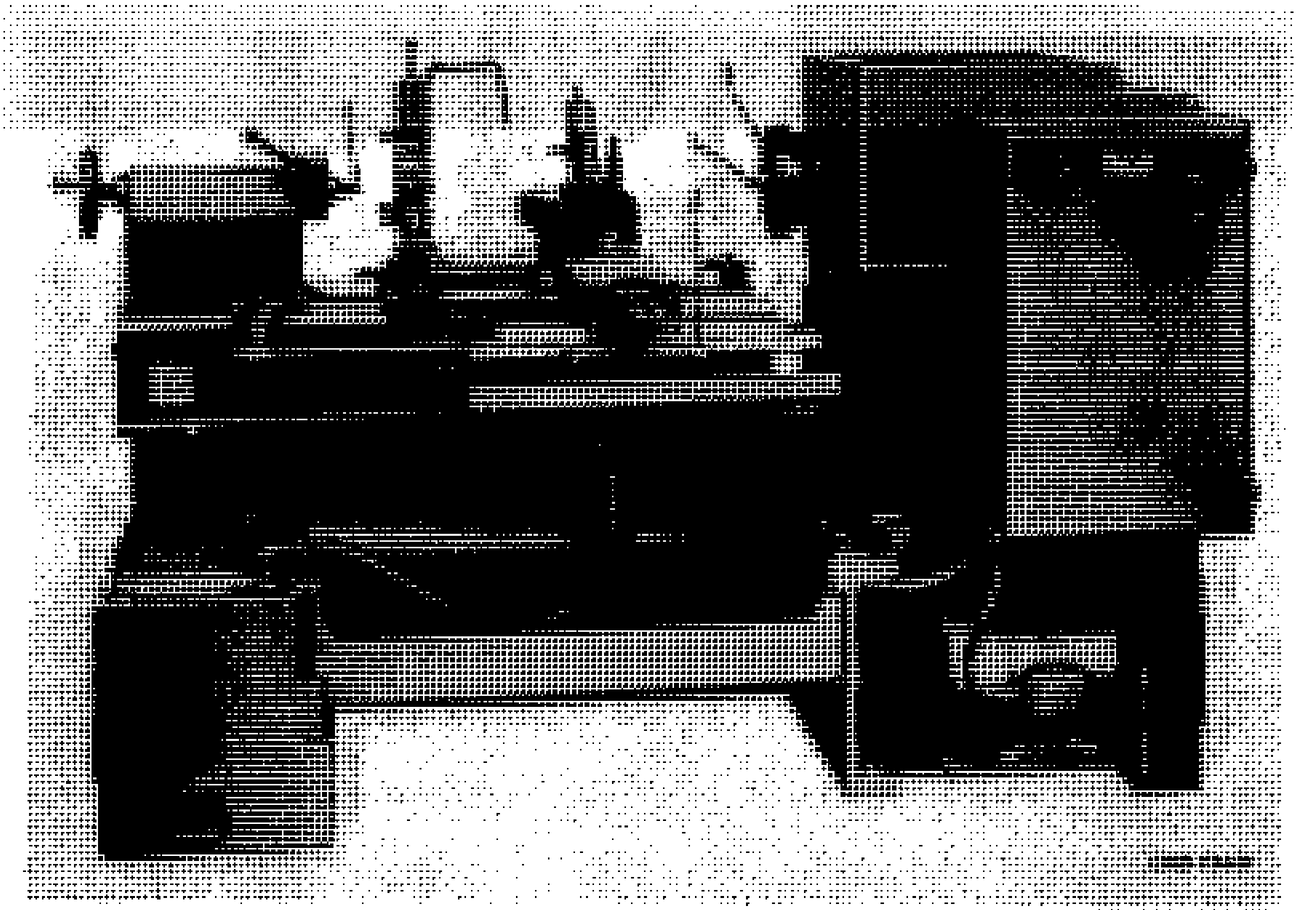


Figure 29. Sliding bed gap engine lathe w/attached equipment (35577:model 17/28” Regal) (3416-725-3508)-left rear view.

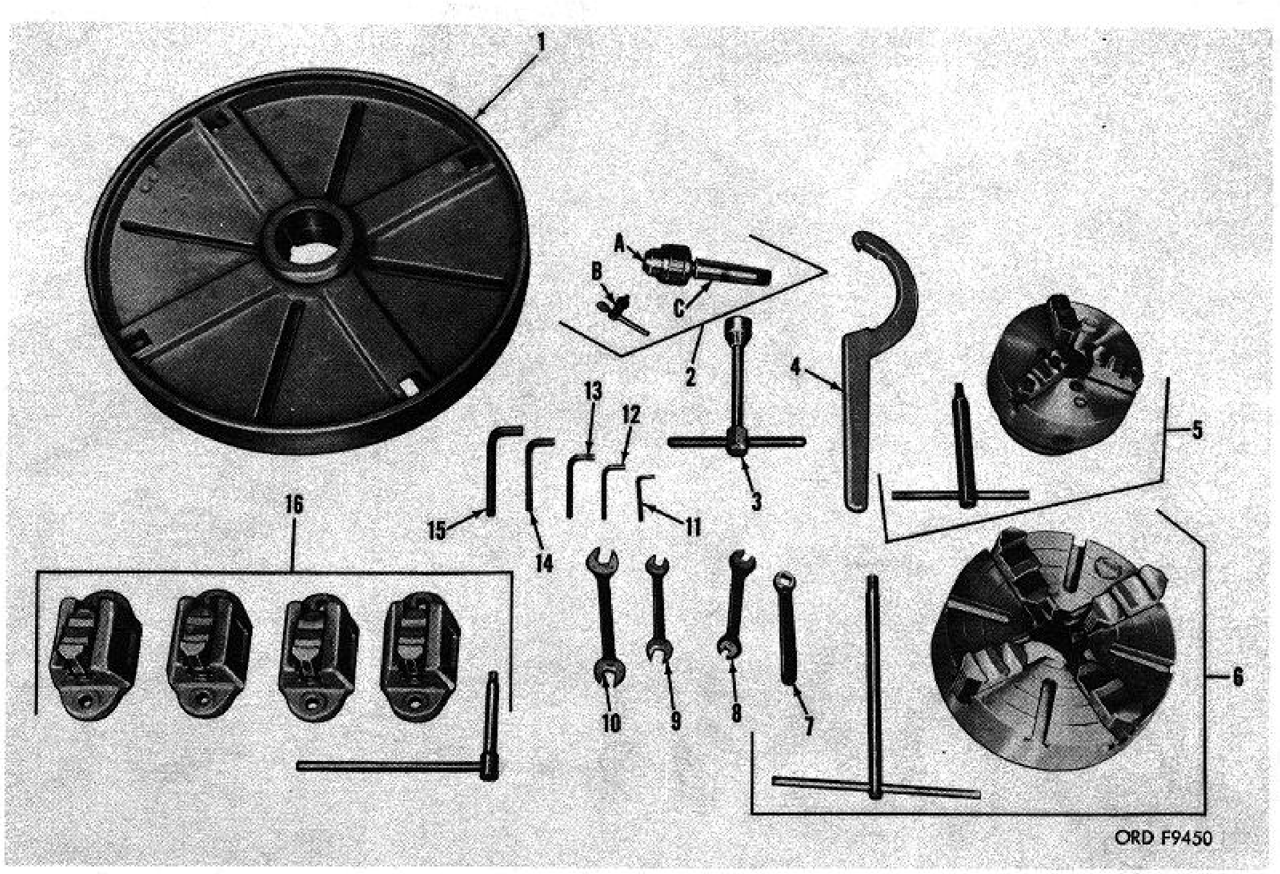


Figure 30. Tools and equipment (for model 17/28” Regal lathe) (3416-725-3508).

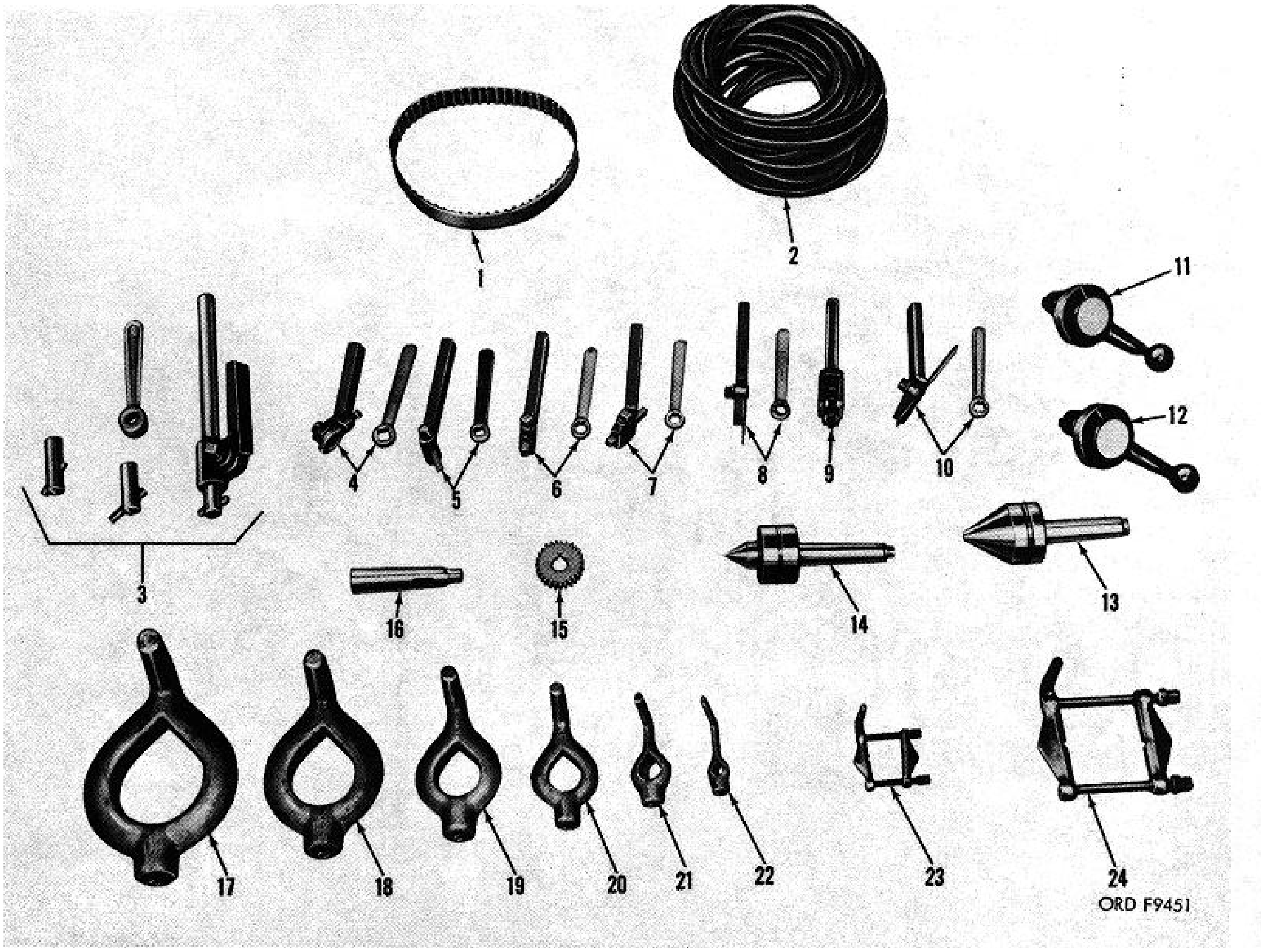


Figure 31. Equipment and repair parts (for model 17/28" Regal lathe) (3416-725-3508).

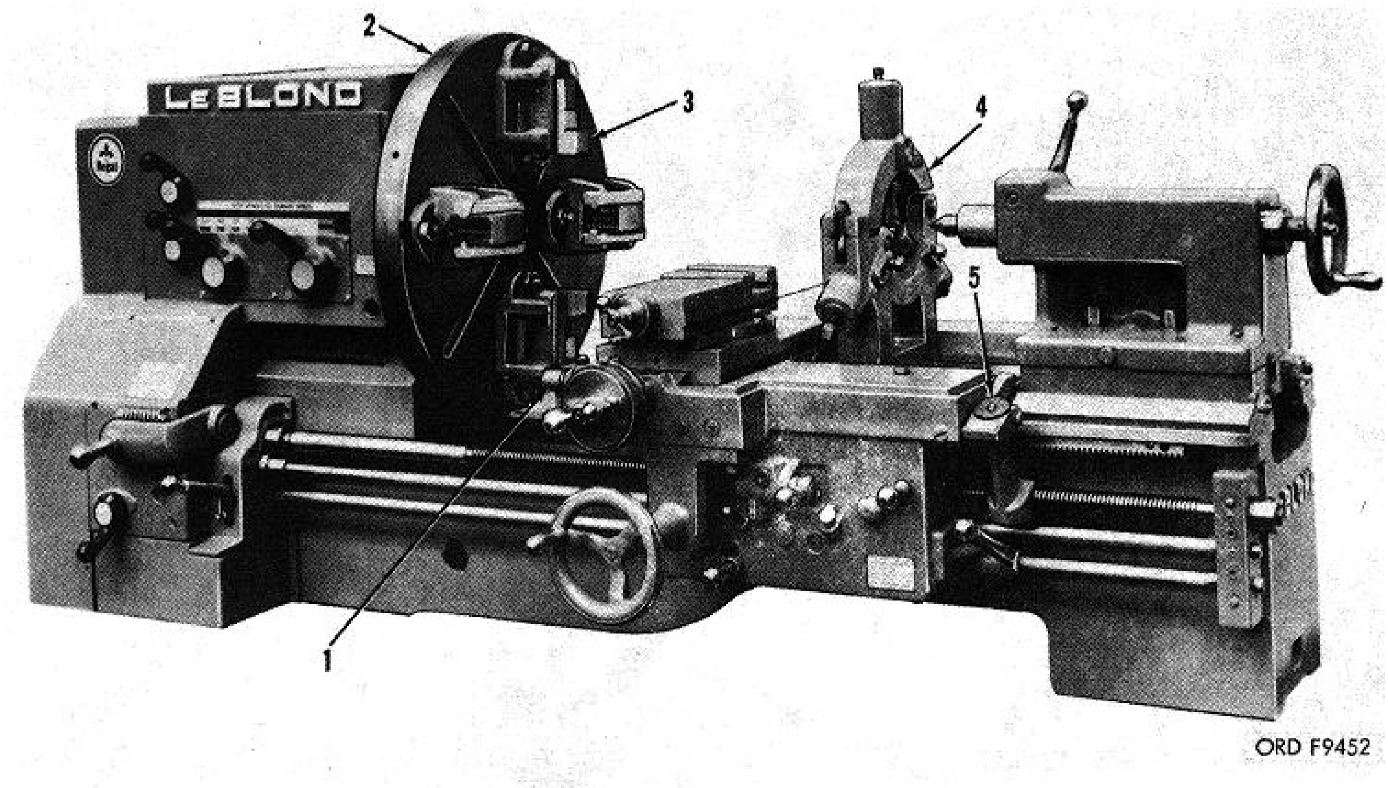


Figure 32. Plain bed gap engine lathe w/attached equipment (35377: model 17" Regal) (3416-828-8714)-right front view.

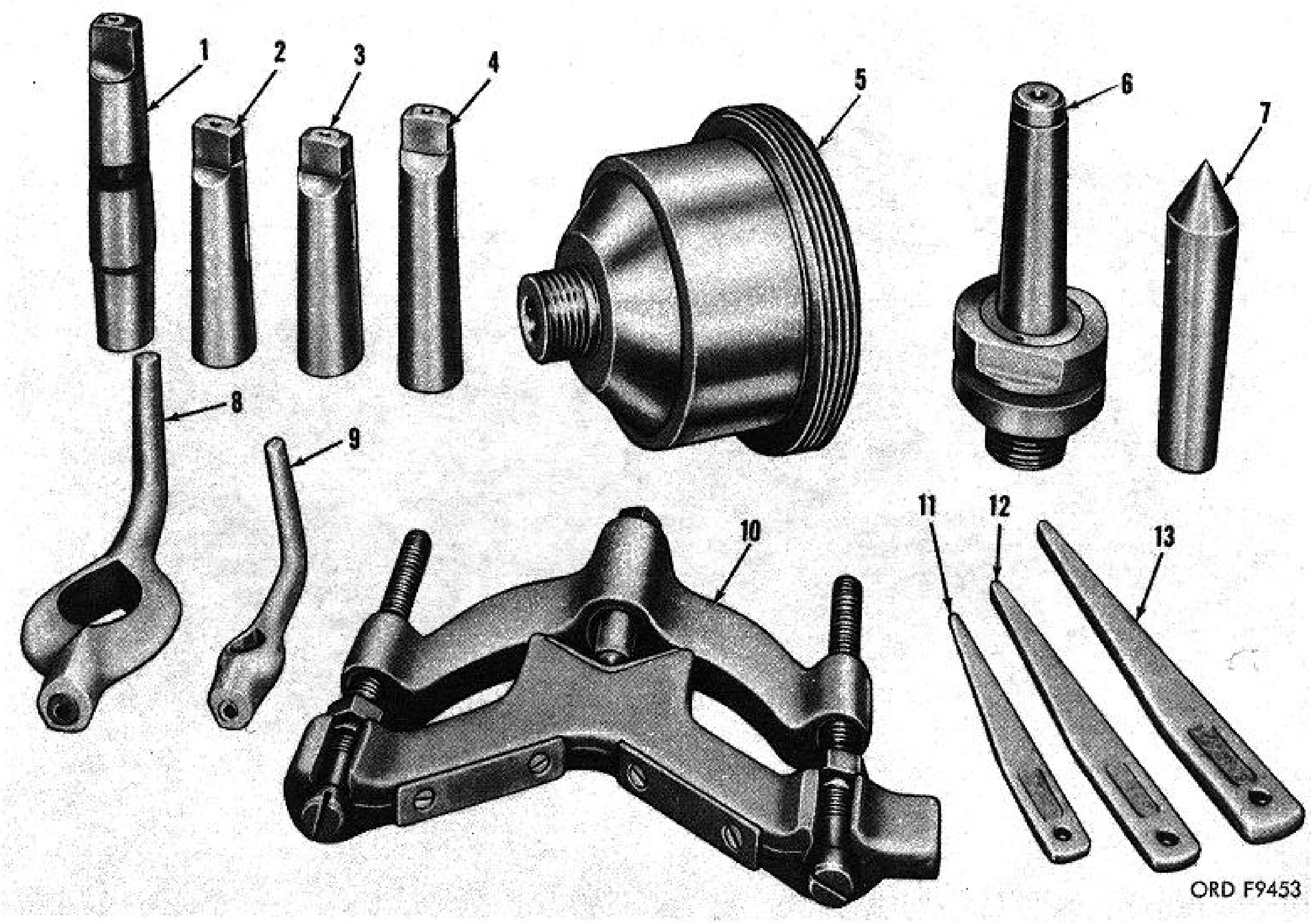


Figure 33. Equipment (for model 17" Regal lathe) (3416-828-3714).

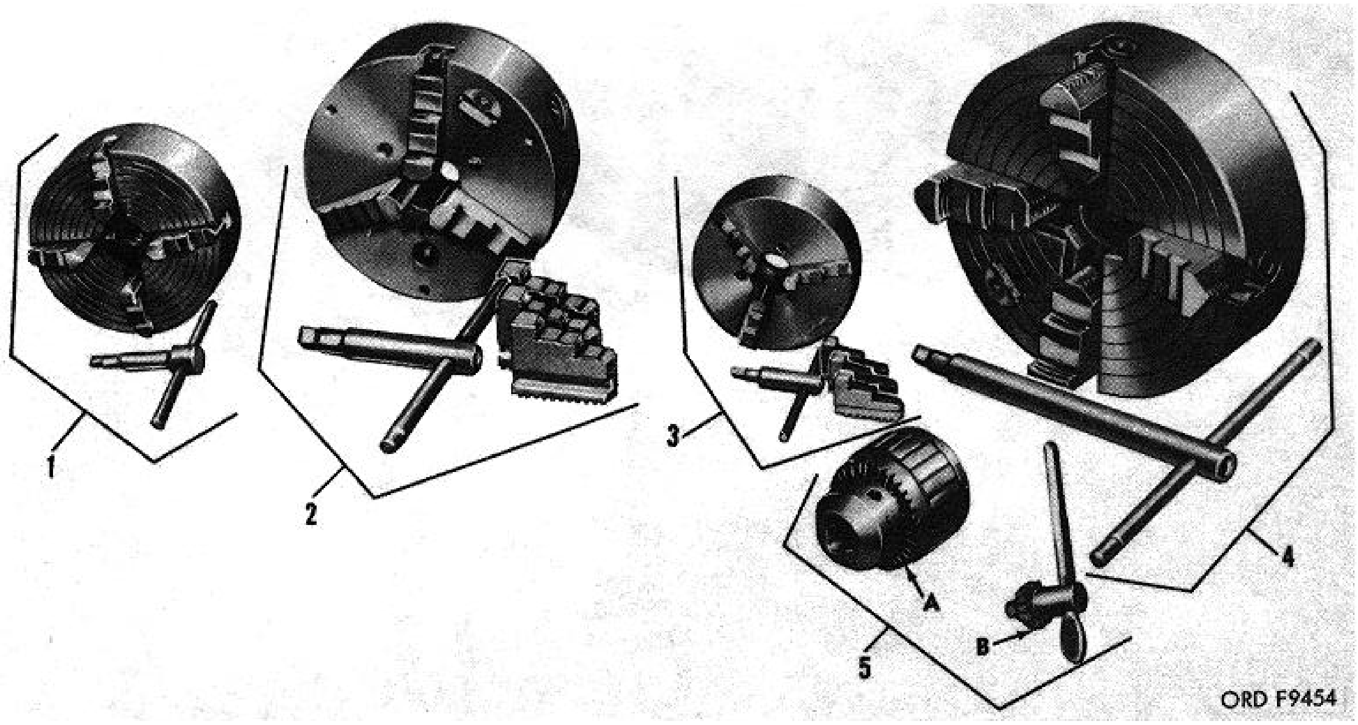


Figure 34. Equipment (for model 17' Regal lathe) (3416-828-3714),

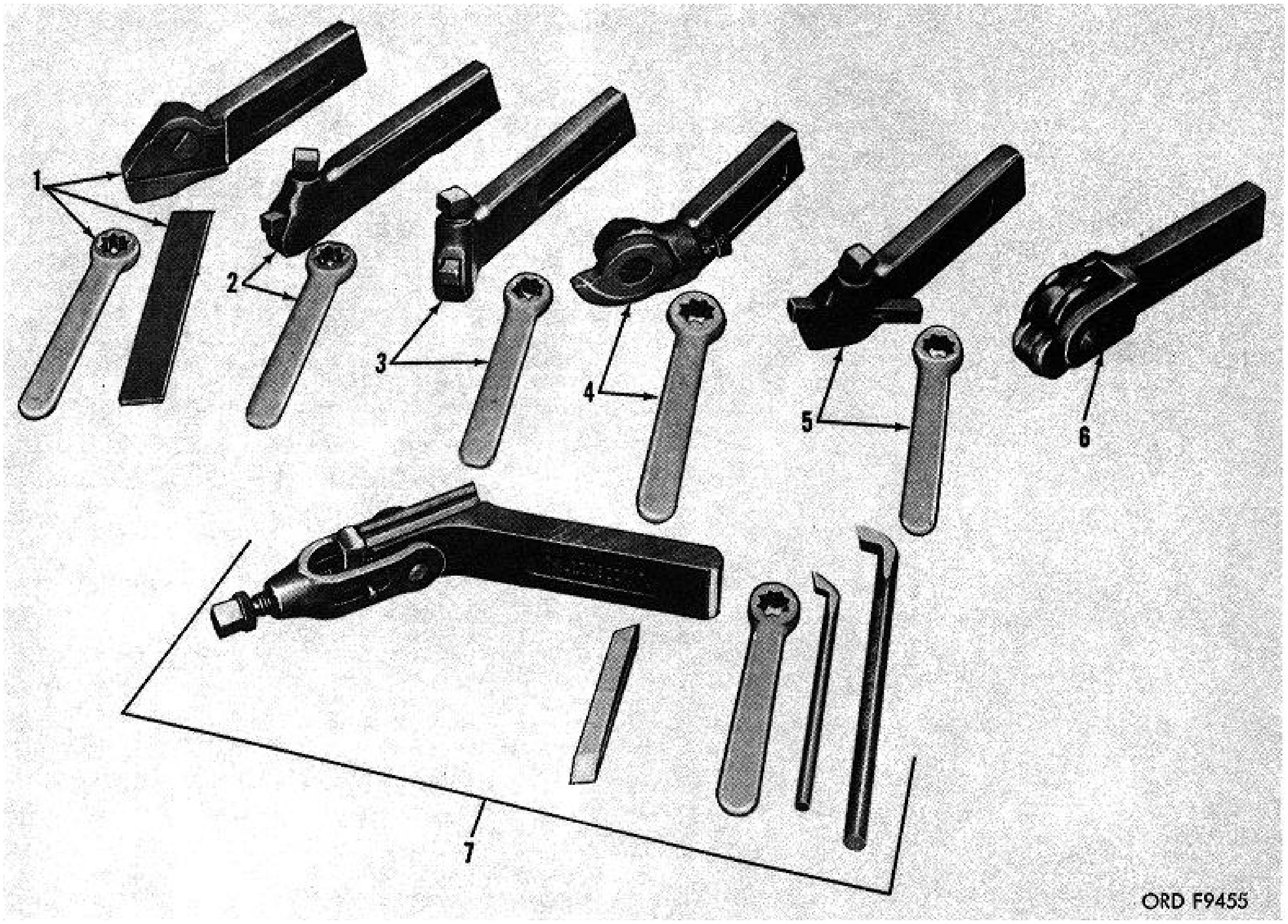


Figure 35. Equipment (for model 17” Regal lathe) (3416-828-3714).

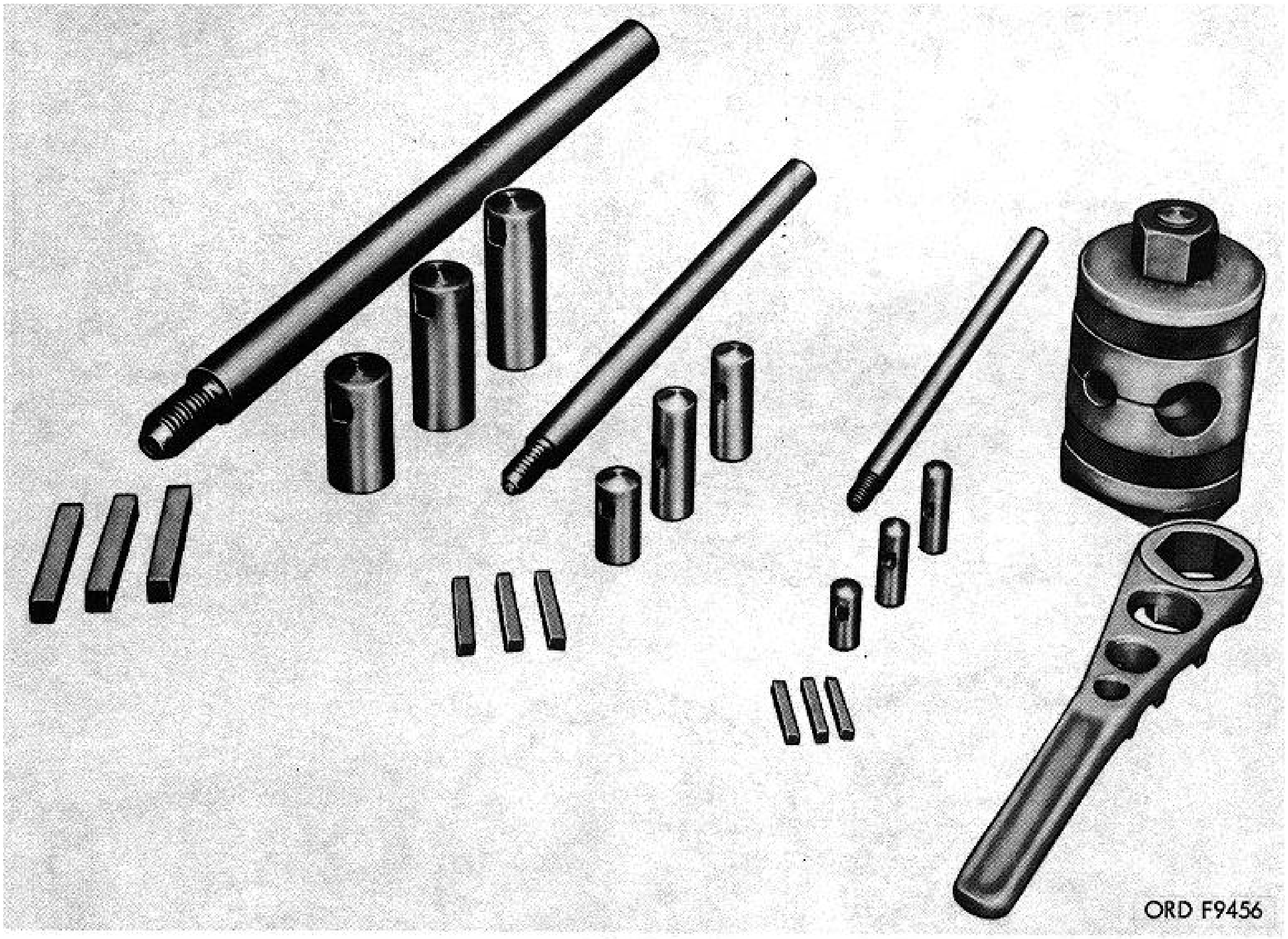


Figure 36. Equipment (for model 17" Regal lathe) (3416-828-3714).

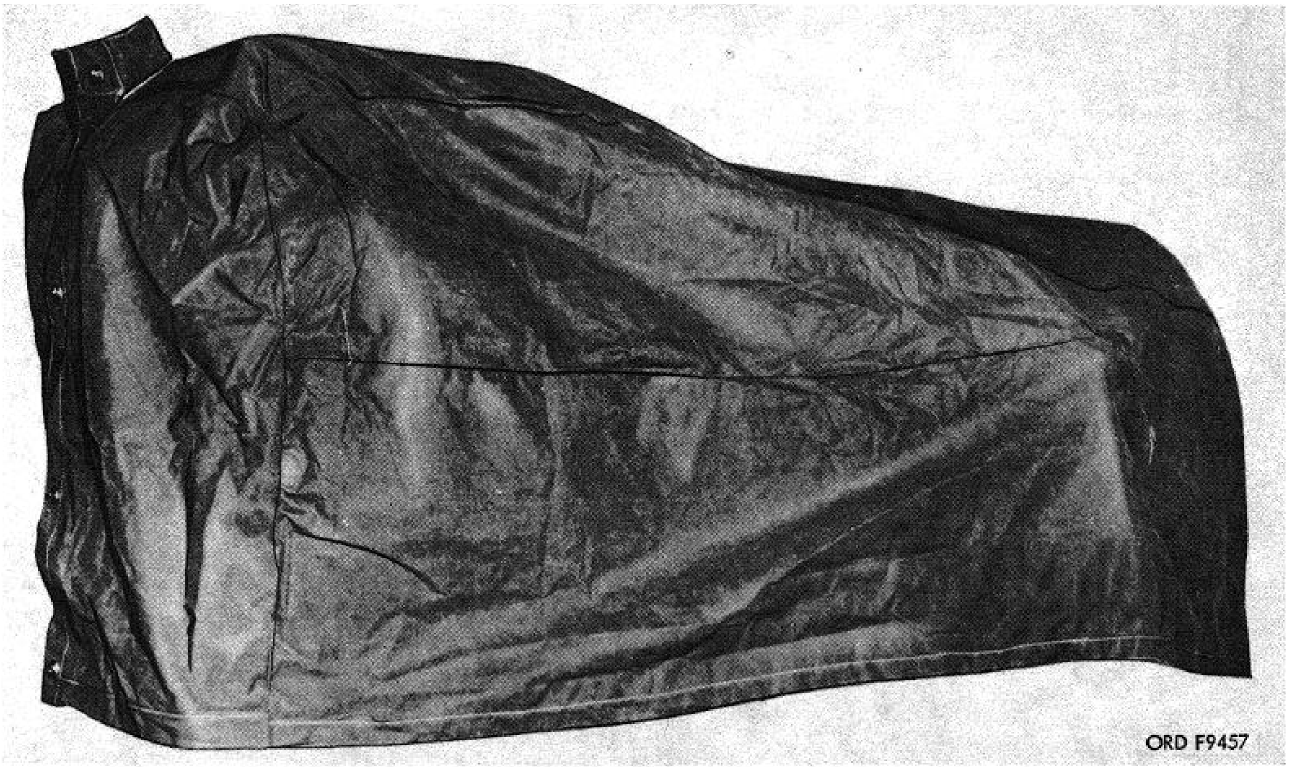


Figure 37. Equipment (canvas cover) (for model 17” Regal lathe) (3416-828-3714).

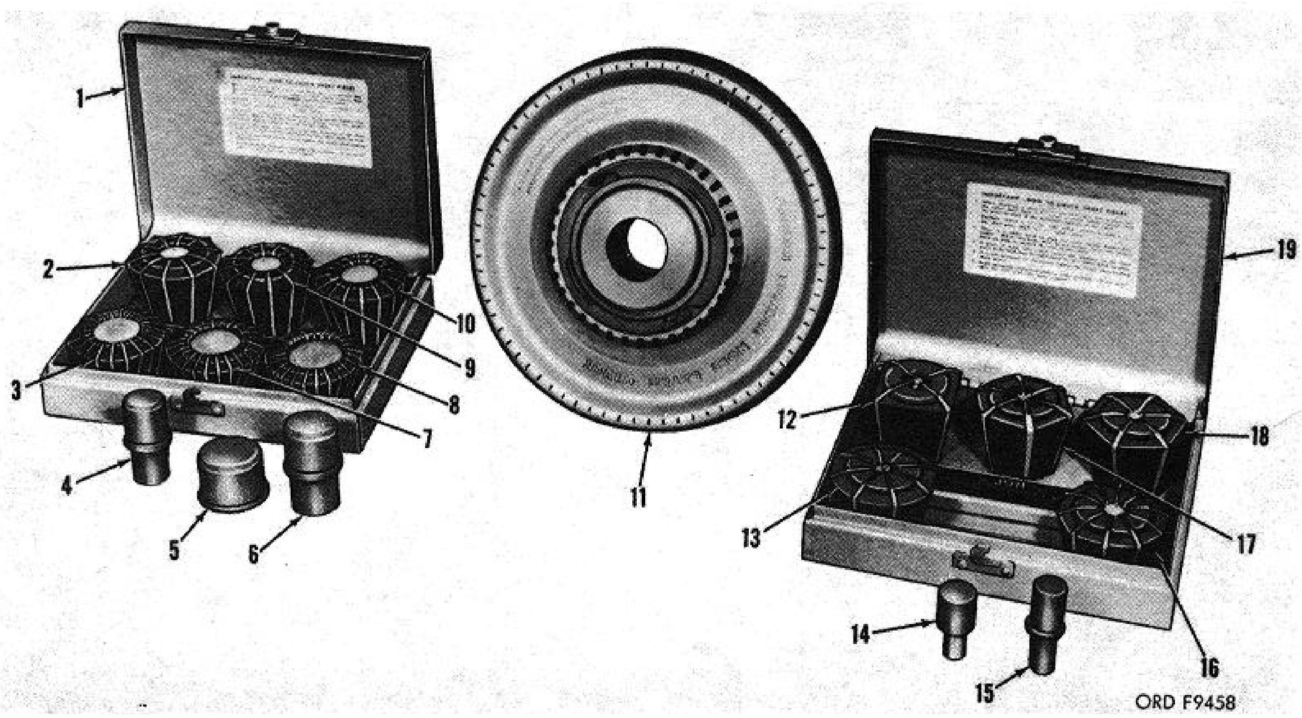


Figure 38. Equipment (for model 17" Regal lathe) (3416-828-3714).

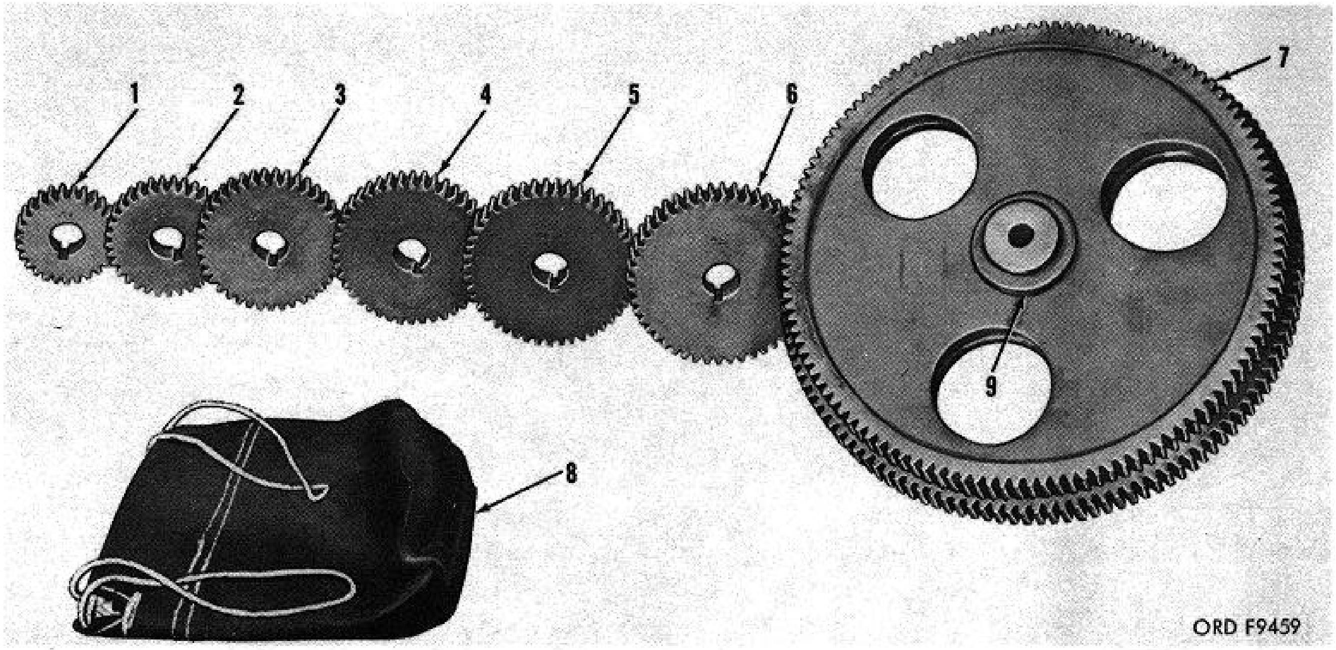


Figure 39. Equipment (for model 17" Regal lathe) (3416-828-3714).

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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 decagram = 10 grams = .35 ounce
1 hectogram = 10 decagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
pound-inches	Newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C