RIVETT

OPERATING AND MAINTENANCE INSTRUCTIONS

RIVETT LATHE & GRINDER Inc.
BRIGHTON · BOSTON · MASS · U · S · A ·

Installation Instructions for 1020 Lathe

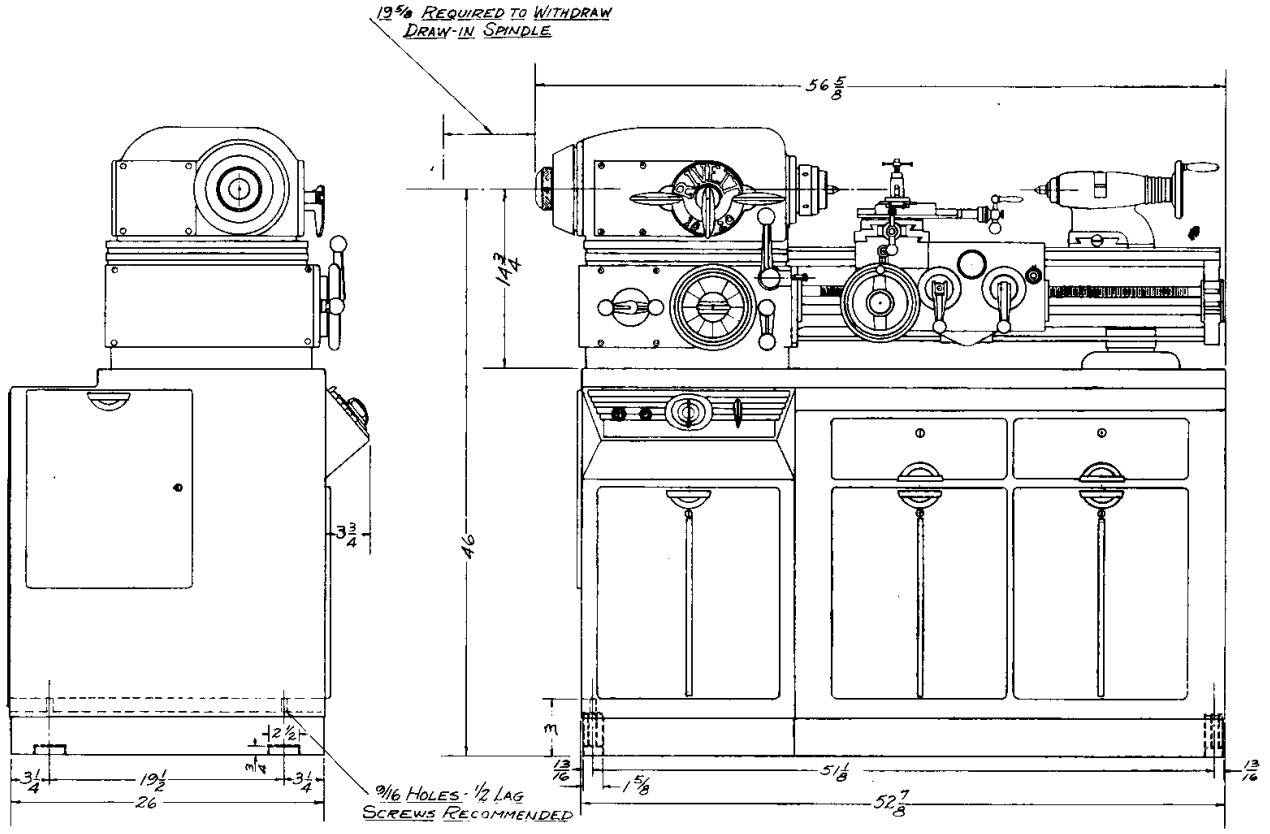
Item 1 - Receiving and Unpacking

If any damage is noticed to packaging, machine or parts, call representative of delivering carrier to inspect condition before removing crate or taking parts from boxes and enter claim against transportation company. The shipper holds receipt in good order for the entire consignment. If any shortage exists, reexamine packing material before discarding. Small pieces may easily be lost unless all excelsior and wrapping paper is thoroughly overhauled.

Carefully unpack, using nail puller for removing crate, box covers and braces. Check all items against packing list. Remove slushing grease using fresh cotton waste or cloth and gasoline or kerosene. Immediately go over all polished and scraped surfaces with oily rag.

Item 2 - Setting Up

Locate cabinet and level same, using precision level on lathe bedways in both directions, lengthwise and crosswise. Allow space behind cabinet for free circulation of air from vents in motor compartment. Fasten to flooring with lag screws or bolts, see Floor Plan below.



FLOOR PLAN
1020 LATHE
RIVETT LATHE & GRINDER INC.
BOSTON, MASS.
E-2146

PRECAUTIONARY INSTRUCTIONS
RIVETT NO. 1020 LATHE

NOTE: The following should be carefully noted by supervisor and operator and used in conjunction with complete instruction book furnished with the lathe.

1. **DON'T allow anyone to operate this lathe until he has read these "DON'TS" and also the lathe Instruction Book and thoroughly understands all controls and functions.**

2. **DON'T attempt to put any actual work on lathe until it has been run-in by a competent operator and is fully understood and is functioning smoothly. This "DON'T" applies to all fine, new machine tools.**

3. **DON'T ever allow anyone to lubricate lathe except with clean oil or grease of suitable type.**

4. **DON'T move the carriage on the lathe bedways until you have thoroughly cleaned off the slushing grease and oiled the ways with proper oil. See Instruction Book, Item 1 and Item 22. Remove slide rest and note ball oilers in top surface of carriage saddle.**

5. **DON'T attempt to move carriage until after releasing carriage binder No. 31.**

6. **DON'T attempt to traverse carriage by either lead screw or feed rod until you have run same back and forth a number of times full length of bed by hand wheel to spread oil film.**

7. **DON'T attempt to run lathe when spindle is in locked position as described Item 6.**

8. **DON'T attempt to throw Feed Control Handle No. 22, which engages reversing clutch, when spindle is running faster than 450 r.p.m.**

9. **DON'T use lathe at high speeds when set for coarse threads or coarse feeds.**

10. **DON'T attempt to thread or power feed until you have thoroughly mastered the method of engaging selector tumbler gear, see Item 9.**

11. **DON'T shift lever No. 17, marked "A", when lathe spindle is turning under power.**

12. **DON'T shift lever No. 18, marked "B", when lathe spindle is turning faster than 100 r.p.m.**

13. **DON'T operate cross feed too far in either direction as doing so will jam gears.**

14. **DON'T take the risk of running carriage by power against headstock or tailstock, — set carriage safety stops.**

15. **DON'T attempt to use carriage stops when lathe spindle is running in reverse.**

16. **DON'T attempt to use power cross feed without first freeing ball stop binder screw No. 8.**

17. **DON'T remove slide rest from lathe saddle without first closing elevator gear cover No. 11.**

RIVETT LATHE & GRINDER INC.

Operating Instructions for 1020 Lathe

The Rivett 1020 Cabinet Lathe is a high grade precision tool room machine and should be treated as such. All controls are conveniently placed at the operator side. Safety interlocks and stops are provided. Ample space has been designed for the placing of tools both on lathe and in cabinet. Wrenches necessary for operation and maintenance are included.

Before starting machine, oil thoroughly, study instructions and all operation plates, particularly thread and feed dial plate, reproduced on Page 6. Until thoroughly acquainted with the lathe, it is recommended that the operator go through each step exactly as given in these instructions.

The lathe has been built to maintain its precision and appearance over a long period of time, and should be cleaned and oiled daily.

Precautionaly Instructions on durable, glazed card (see copy on Page 2) are shipped with each lathe. The purpose of these instructions is to assist the operator in prolonging the life of this precision tool. The instruction card should be mounted so that the operator will see it when working, and so that any new operator or other employee may be duly cautioned not to mishandle the lathe.

Headstock and Quick Change Gearing

The headstock controls, Clutch Lever (No. 3), Spindle Gear Lever (No. 4), and Back Gear Lever (No. 5) - see Page 5, are mounted at the front of the head and are operated by pull-out and turning movements. Lever No. 3, marked CLUTCH, operates a jaw clutch sliding on a multi-splined spindle.

Item 3 - To Drive Spindle with Open Belt

Move lever No. 3 counterclockwise to horizontal position. The spindle is now connected to the driven sheave which is its source of power. Move lever No. 5, marked BACK GEARS, clockwise to horizontal position. The spindle will now turn at open belt speeds.

Item 4 - To Drive Spindle Through Back Gears

Stop machine. With levers in open belt positions, see Item 3, swing lever No. 5 counterclockwise, engaging back gears, to its locked angular position. The spindle is now locked. Swing lever No. 3 clockwise disengaging the clutch. The spindle will now turn at back gear speeds.

Item 5 - To Turn Spindle Freely

With levers No. 3 and No. 5 in positions as described in Item 4, swing lever No. 5 clockwise to its horizontal position. The spindle is now disengaged from its drive and will turn freely by hand-wheel No. 2.

Item 6 - To Lock Spindle for Replacing Attachments

Move lever No. 3 to its horizontal position and move lever No. 5 to its angular position. The spindle is now locked.

Operating Instructions for 1020 Lathe

Item 7 - To Mount Spindle Nose Attachments

Lock spindle, see Item 6. Turn Spindle Nose Nut (No. 6) clockwise, using single spanner wrench, until nose guard or nose attachment rides loosely on the spindle and then remove same by hand. To replace attachment, reverse sequence of operations. Only a slight counterclockwise pressure is necessary to lock attachment securely to spindle. Spindle key prevents any accidental backing off.

Item 8 - To Mount Spindle Mouth Attachments

Turn knurled Draw-in Spindle Knob (No. 1) clockwise to draw in collets, etc. Single spanner wrench used on spindle nose nut also fits this knurled knob.

Item 9 - To Set Up Compounds for Thread Cutting or Feed Rod Turning

(1) Set lathe for open belt turning - see Item 3. (This makes gear shifting much easier.)

(2) Set Lever No. 4 so that its pointer matches index line marked Feed. (This gear engages gear box with spindle.)

(3) Set Feed Control Handle (No. 22) for right or left hand thread.

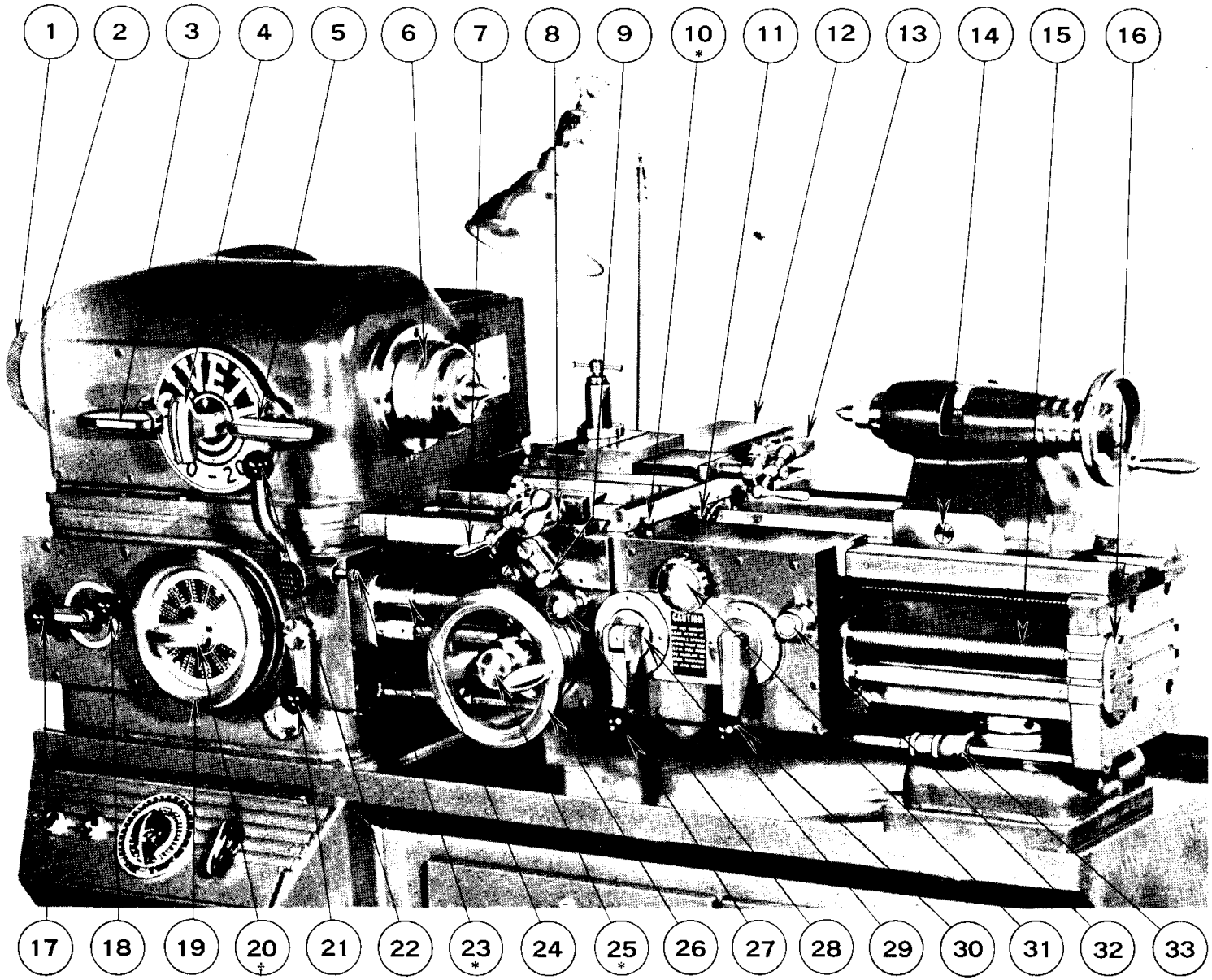
(4) Unlock Tumbler Pivoting Handle (No. 20) and rotate tumbler to disengaged position and lock. (Swinging handle 180° unlocks by disengaging its locking pin, and rotating handle clock-wise as far as it will go disengages tumbler gear from nest of compounds. Swinging handle 180° back to original position relocks by re-engaging locking pin.)

(5) Turn Tumbler Selector Wheel (No. 19) until group in which selected thread or feed appears matches indicator.

(6) Set Compound Levers 'A' and 'B' (No. 17 and No. 18) according to information on index plate. For example for 32 threads per inch = A-3, B-1. Settings and threads (or feeds) are on corresponding lines on dial.

(7) Rotate Handle No. 20 counterclockwise until proper group number on its hub matches same number on hub of selector wheel No. 19 (8-8, 9-9, etc.). Lock Handle No. 20. (Swinging Handle back 180° reengages its locking pin, - plunger snapping out in this position proves that pin has engaged.)

(8) Select proper spindle speed. (If lathe has Jackshaft Drive, see Speed Chart inside of cabinet door, or if Variable Speed Drive, see speed dial on control panel.)

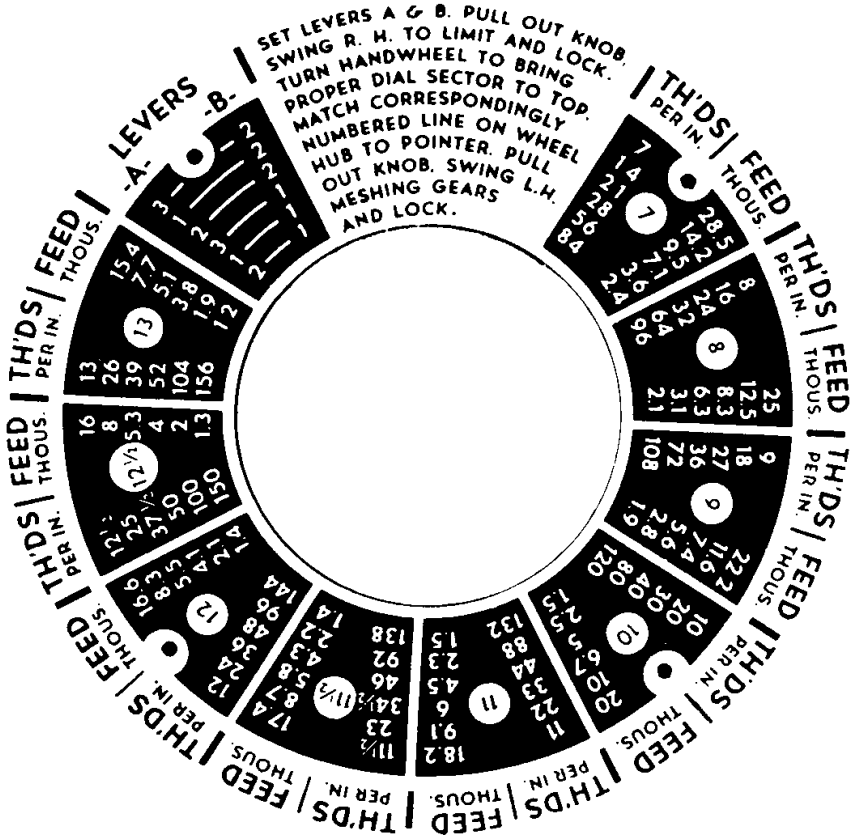


1. Draw-in Spindle
2. Spindle Hand-wheel
3. Clutch Lever
4. Spindle Gear Lever
5. Back Gear Lever
6. Spindle Nose Nut
7. Cross Feed Screw Handle
8. Ball Stop Binding Screw
9. Elevator Gear Lever
*10. Slide Rest Binding Screws
11. Elevator Gear Sliding Cover Handle
12. Slide Rest Chip Cover
13. Taper Attachment Slotted Bracket
14. Tailstock Adjusting Screws
15. Lead Screw
16. Lead Screw Bearing Retaining Plate
17. Compound (A) Lever
18. Compound (B) Lever
19. Tumbler Selector Wheel
† 20. Tumbler Pivoting Knob
21. Lead Screw — Feed Rod Selector
22. Feed Control Handle
* 23. Feed Control Handle Locking Pin
24. Lead Screw Locking Screw
* 25. Gear Train Release Knob
26. Carriage Traverse Hand-wheel
27. Friction Handle
28. Feed Selector Knob
29. Friction Adjusting Screw
30. Lead Screw Nut Operating Handle
31. Carriage Binder
32. Thread Dial Knob
33. Automatic Carriage Stops

* Omitted in lathes shipped after Dec. 1, 1941

† Superseded by lever in lathes shipped after Dec. 1, 1941

THREAD AND FEED DIAL



THE RIVETT 1020 LATHE WILL CUT, THRU QUICK CHANGE GEARS, ALL STANDARD THREADS LISTED BELOW.

S.A.E. STANDARD THREADS							
SIZE	N.C.	N.F.	E.F.	SIZE	N.C.	N.F.	E.F.
0		80		9/16	12	18	24
1	64	72		5/8	11	18	24
2	56	64		3/4	10	16	20
3	48	56		7/8	9	14	20
4	40	48		1	8	14	20
5	40	44		1 1/8	7	12	18
6	32	40		1 1/4	7	12	18
8	32	36		1 3/8		12	18
10	24	32		1 1/2		12	18
12	24	28		1 3/4			16
1/4	20	28	32	2			16
5/16	18	24	32	2 1/4			16
3/8	16	24	32	2 1/2			16
7/16	14	20	28	2 3/4			16
1/2	13	20	28	3			16

B.S.F. – BRITISH ST'D. FINE					
SIZE	TH'DS	SIZE	TH'DS	SIZE	TH'DS
7/32	28	9/16	16	1 1/8	9
1/4	26	5/8	14	1 1/4	9
9/32	26	11/16	14	1 3/8	8
5/16	22	3/4	12	1 1/2	8
3/8	20	13/16	12	1 5/8	8
7/16	18	7/8	11	1 3/4	7
1/2	16	1	10	2	7

AMERICAN ST'D. PIPE THREADS					
SIZE	TH'DS	SIZE	TH'DS	SIZE	TH'DS
1/8	27	1	11 1/2	3	8
1/4	18	1 1/4	11 1/2	3 1/2	8
3/8	18	1 1/2	11 1/2	4	8
1/2	14	2	11 1/2	4 1/2	8
3/4	14	2 1/2	8	5	8

BR. ST'D. WHIT	
SIZE	THDS
1/4	20
5/16	18
3/8	16
7/16	14
1/2	12
9/16	12
5/8	11
11/16	11
3/4	10
13/16	10
7/8	9
15/16	9
1	8
1 1/8	7
1 1/4	7

Operating Instructions for 1020 Lathe

Item 10 - Thread Cutting

Having set up, per Item 9, for suitable feed and spindle speed, carry out the following steps: -

(1) Set Selector Handle (No. 21) to operate lead screw.

(2) Set Feed Selector Knob (No. 28) to neutral (hair line comes to edge of hole).

(3) Swing Lead Screw Nut Operating Handle (No. 30) counterclockwise to engage nut.

(4) Check setting of Feed Control Handle (No. 22) This handle was set either right or left per Item 9 (3) above to enable meshing of compounds). To Left is for R. H. threads or to Right is for L. H. threads. (Handle operates a reversing clutch.)

(5) Set Automatic Carriage Stops (No. 33) to prevent tool overrunning. (See Item 15.)

Note: - Use Thread Dial on long threads - see Item 11.

Item 11 - To Use Thread Dial

Use of thread dial in cutting long threads is recommended.

Thread dial should be used whenever possible for indexing double and quadruple threads.

Disengage when not required to save wear on bronze gear.

Item 12 - Feed Rod Turning

Having set up per Item 9 for suitable feed and spindle speed, carry out the following steps: -

(1) Set Handle No. 21 to operate feed rod.

(2) For Cross Feed - push Knob No. 28 in and turn left to lock (slightly turning Cross Feed Screw Handle(No. 7) will aid in meshing gears - see Item 13).

(3) For Carriage Feed - pull Knob No. 28 out and turn left to lock (slightly rotating Carriage Traverse Handwheel(No. 26) will aid in meshing gears).

(4) Set Handle No. 22 to give desired direction of feed, (cf. Item 10 (4) above). DO NOT shift this handle at spindle speeds greater than 450 R.P.M.

(5) Swing Friction Handle (No. 27) upward to engage carriage friction clutch.

Operating Instructions for 1020 Lathe

Item 13 - Operation of Slide Rest

Normally the slide rest should remain on carriage saddle. If for any reason it has been removed, clean dove-tail of saddle thoroughly before remounting as follows: -

(1) Mount slide rest on saddle - match arrows at left side of both members.

(2) Lock slide rest to saddle by means of fillister head screw at left rear of slide rest base engaging tapped hole in saddle.

Note: A second tapped hole, 1" toward front of saddle from this hole, is provided for setting slide rest in extreme forward position for extra large diameter to be machined. Cross feed in this setting by hand only.

(3) Turn Knob No. 11 clockwise to uncover elevator gear.

(4) Unscrew Knurled Knob on Elevator Gear Lever (No. 9) and swing lever counterclockwise until gears mesh - (slightly turning cross feed screw handle No. 7 will aid in meshing gears) and lock by screwing in Knurled Knob.

(5) Before using power cross feed, release Ball Stop Binding Screw (No. 8).

When slide rest is to be removed, lower elevator gear by swinging Lever 9 clockwise and lock by Knurled Knob. Close slide to exclude chips and dirt from carriage.

Item 14 - To Mount Carriage Attachments

Remove slide rest from carriage saddle. Mount Tee Rest or other plain slide rest attachment by engaging dove-tail and sliding to desired transverse position and bind. To position Universal Carriage Milling Attachment, match arrow on attachment base with arrow on saddle to assure alignment of elevator gear.

Item 15 - Carriage Stops

Micrometer Stops (No. 33) to right and left of carriage operate stop rod in both directions. Lock in approximate desired positions on rod by tightening set screws against flat on rod, and obtain exact carriage stop positions by screw adjustment on graduated dials which are then locked by means of knurled nuts.

Item 16 - To Set Up for Special Threads

Remove rectangular plate at left end of lathe housing and set up quadrants and gears per Gear Table 94. Quadrants and pick-off gears, required for special threads, are not standard equipment with lathe.

Item 16A - To Cut Multiple Threads

Most double and quadruple threads can be cut by proper sequence of engagement between lead screw nut and eight pitch lead screw employing Thread Dial for indexing, (see G. T. 96, Page 10) as follows:

(1) Set up to cut desired lead, using method outlined for single threads, see Item 9.

(2) Cut first thread to desired depth, noting on thread dial the point at which nut engages lead screw.

(3) Start parallel thread by engaging lead screw with nut at point prescribed by Table, G.T.-96, Page 10, located by graduations on thread dial.

To cut such double and quadruple threads as cannot be obtained by indexing with Thread Dial and for triple and sextuple threads use G.T. 96 Spindle Indexing Method and proceed as follows:

(1) Set up to cut desired lead, using method outlined for threads, See Item 9.

(2) Cut first thread to desired depth and return carriage to starting position.

(3) With power off, reengage clutch (No. 22) or nut (No. 30) or both, as though recutting the first thread.

(4) Turn headstock spindle by hand in cutting direction until all back lash has been taken up (this is noted when carriage begins to move) and index line on spindle matches zero point on plate at left end of headstock. Index lines are visible through hole in spindle hand wheel No. 2.

(5) Disengage Compound 'B' (Lever No. 18), swing lever as far as it will go, (i.e. if 'B' is in 1 swing toward 2, or conversely if in 2 swing toward 1, until gears are felt to touch), and then retract to neutral detent which is between 1 and 2 (this procedure is necessary to assure disengagment of gears).

(6) Turn headstock spindle in cutting direction until index line on spindle matches desired fractional index line on fixed ring, 1/4 or 1/3 etc. Note: This operation is carried out in conjunction with operation (7) below.

(7) Reengage Compound 'B'. (To facilitate engagement of Compound 'B' for this setting, turn spindle till hairline is about 1/8 short of desired fractional division on fixed ring. Now return Compound 'B' to detented driving position by easing spindle forward until gears mesh and hair-line matches fractional division.) Now cut second thread.

Operating Instructions for 1020 Lathe

(8) Repeat steps 3 - through 7 for third thread. For sextuple, repeat again three more times.

MULTIPLE THREAD CUTTING - RIVETT 1020 LATHE

SPINDLE
BRING INDEX LINE TO ZERO MARK
DISENGAGE COMPOUND "B"
INDEX TO LISTED FRACTION - SEE CHART
REËNGAGE COMPOUND "B"

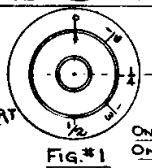


FIG. *1

ONE GRADUATION = ONE THIRD OF LEAD SCR.

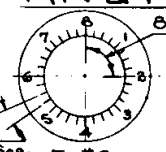


FIG *2

8 GRADUATIONS = 1" OF LEAD SCREW
THREAD DIAL
DISENGAGE LEAD SCREW NUT
INDEX LISTED NUMBER OF GRADUATIONS - SEE CHART
REËNGAGE LEAD SCREW NUT

THDS PER INCH	LEAD IN INCHES	DOUBLE METHOD	DOUBLE INDEX	DOUBLE FIG.	DOUBLE PITCH	TRIPLE METHOD	TRIPLE INDEX	TRIPLE FIG.	TRIPLE PITCH	QUADRUPLE METHOD	QUADRUPLE INDEX	QUADRUPLE FIG.	QUADRUPLE PITCH	SEXTUPLE METHOD	SEXTUPLE INDEX	SEXTUPLE FIG.	SEXTUPLE PITCH
*2	.500	THD DIAL	2	2	.250	SPINDLE	1/3	1	.167	THD DIAL	1	2	.125	SPINDLE	1/6	1	.083
*3	.333	THD DIAL	4	2	.167	"	1/3	1	.111	THD DIAL	2	2	.083	"	1/6	1	.056
*4	.250	THD DIAL	1	2	.125	"	1/3	1	.083	SPINDLE	1/4	1	.063	"	1/6	1	.042
*5	.200	THD DIAL	4	2	.100	"	1/3	1	.067	THD DIAL	2	2	.050	"	1/6	1	.033
*6	.167	THD DIAL	2	2	.083	"	1/3	1	.056	THD DIAL	1	2	.042	"	1/6	1	.028
7	.143	THD DIAL	4	2	.071	"	1/3	1	.048	THD DIAL	2	2	.036	"	1/6	1	.024
8	.125	SPINDLE	1/2	1	.063	"	1/3	1	.042	SPINDLE	1/4	1	.031	"	1/6	1	.021
9	.111	THD DIAL	4	2	.056	"	1/3	1	.037	THD DIAL	2	2	.028	"	1/6	1	.019
10	.100	THD DIAL	2	2	.050	"	1/3	1	.033	THD DIAL	1	2	.025	"	1/6	1	.017
11	.091	THD DIAL	4	2	.045	"	1/3	1	.030	THD DIAL	2	2	.023	"	1/6	1	.015
11½	.087	SPINDLE	1/2	1	.044	"	1/3	1	.029	SPINDLE	1/4	1	.022	"	1/6	1	.014
12	.083	THD DIAL	1	2	.042	"	1/3	1	.028	SPINDLE	1/4	1	.021	"	1/6	1	.014
13	.077	THD DIAL	4	2	.038	"	1/3	1	.026	THD DIAL	2	2	.019	"	1/6	1	.013
14	.071	THD DIAL	2	2	.036	"	1/3	1	.024	THD DIAL	1	2	.018	"	1/6	1	.012
15	.067	THD DIAL	4	2	.033	"	1/3	1	.022	THD DIAL	2	2	.017	"	1/6	1	.011
16	.063	SPINDLE	1/2	1	.031	"	1/3	1	.021	SPINDLE	1/4	1	.016	"	1/6	1	.010
17	.059	THD DIAL	4	2	.029	"	1/3	1	.020	THD DIAL	2	2	.015	"	1/6	1	.010
18	.056	THD DIAL	2	2	.028	"	1/3	1	.019	THD DIAL	1	2	.014	"	1/6	1	.009
19	.053	THD DIAL	4	2	.026	"	1/3	1	.018	THD DIAL	2	2	.013	"	1/6	1	.009
20	.050	THD DIAL	1	2	.025	"	1/3	1	.017	SPINDLE	1/4	1	.013	"	1/6	1	.008

*= USE PICK-OFF GEARS

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Item 17 - To Set Up and Operate Taper Attachment

Mount taper attachment in slot at rear of bed, set to desired position and bind. Disconnect slide rest from gear train by lowering elevator gear and remove locking screw (cf. Item 13 (2) above). Close elevator gear slide cover. Slide rest is now free on carriage saddle. Attach slotted connecting bracket to slide rest and mount taper attachment slide on swivel bar. Avoid positioning slide rest in such a way as to allow it to be transversed too far in either direction by taper attachment.

Maintenance Instructions for 1020 Lathe

Item 18 - To Replace Spindle Vee Belts

Vertical matched Vee belts from drive to lathe spindle may be replaced at any time without disturbing drive or removing lathe spindle or headstock. Remove draw-in spindle, loosen handwheel nut with special spanner wrench provided and draw assembly of wheel, sleeve and nut off lathe spindle. Take out three Allen cap screws and remove cover plate at left end of headstock. Remove Vee belts from driving sheave below and withdraw through uncovered opening. Slip new belts one at a time downward through uncovered opening and place on spindle sheave. Finally, place belts on driving sheave. Replace plate and hand-wheel and lock the latter by tapered sleeve and nut.

Item 19 - To Adjust Carriage Friction Clutch

Loosen set screws in Friction Adjusting Screw Plate (No. 29) and rotate plate counterclockwise to increase or clockwise to decrease clutch friction. Retighten set screws.

Item 20 - Gear Box Lubrication

Flood lubrication is provided by a gear pump, having pressure relief and by-pass, belted to the motor. The lubricating system is protected by a filter which requires occasional care, see filter instructions on inside of cabinet door. Oil in gear case should show half way in the sight glass at head end of bed. Filler plug is in rear of headstock. Heavy transmission oil is used. At least once a year, drain all oil out of case and replace with new. Drain plug is in tee directly under cabinet top.

Item 21 - Headstock Lubrication

All headstock bearings are grease packed in assembly and should not be relubricated, under normal operating conditions, for several months after machine has been put into operation. Approximately one cubic inch per lubrication point may be introduced by grease gun at the following locations: (1) headstock front bearings - pipe plug, directly below spindle; (2) headstock rear bearing - pipe plug, under removable strip at left end of bed directly below hand-wheel; (3) headstock back gear bearing right - pipe plug at top side of serial number plate; (4) headstock back gear bearing left - pipe plug under square plate at left end of headstock. It is very important to guard against introducing particles of grit, or any foreign matter when lubricating.

Item 22 - Recommended Lubricants

The following or equivalent lubricants are recommended.

Gear Box	S.A.E. 50
Headstock	New York, New Jersey S59 Non-Fluid Oil
Sliding Surfaces	S.A.E. 50
Carriage Well	XX Machine

Operation and Maintenance Instructions for Motor Jackshaft Drive

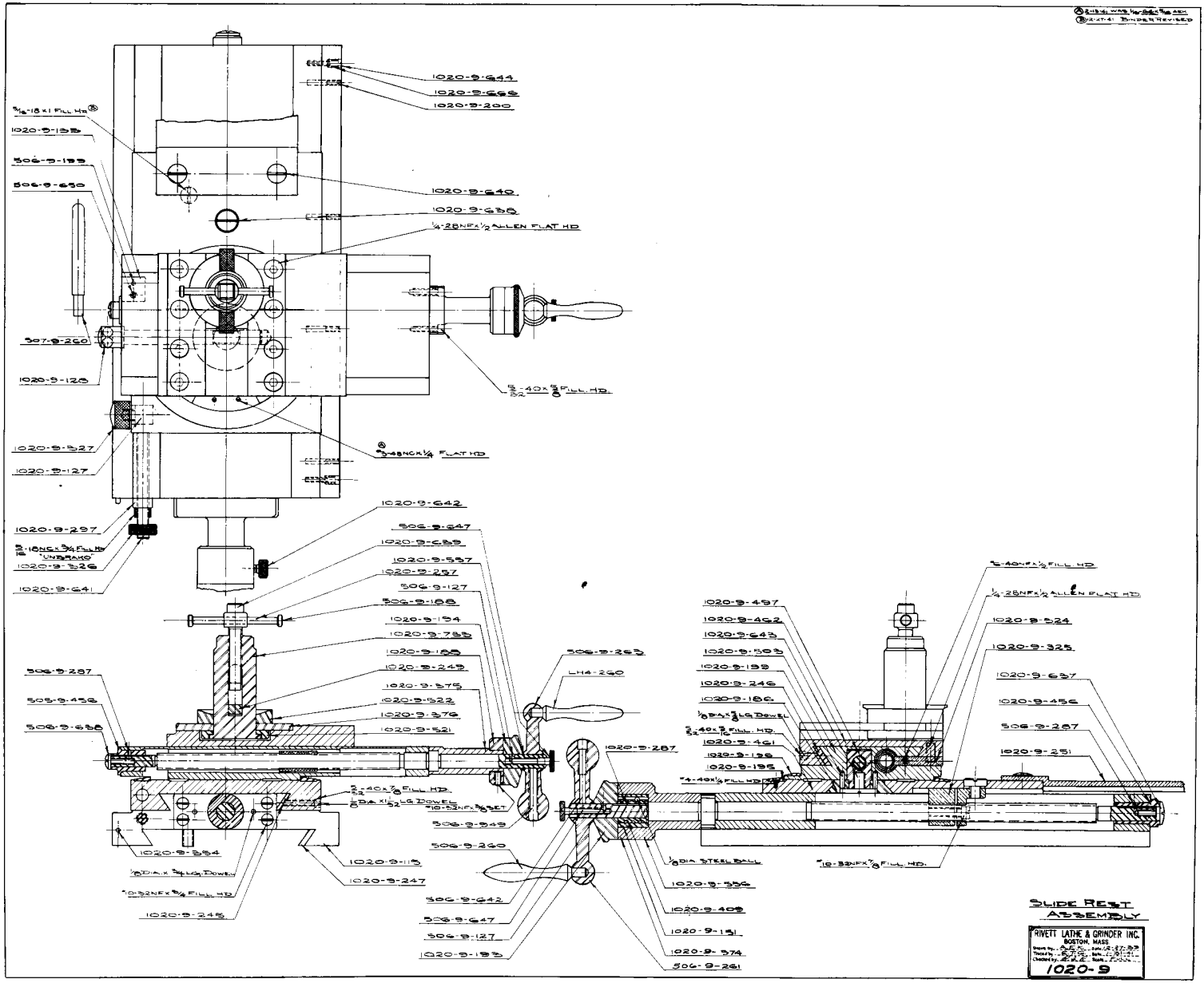
Item 23 - Operation and Maintenance Instructions for Motor Jackshaft Drive

The two speed motor is controlled by a drum switch or push buttons or both, (depending upon the electrical specifications) mounted in the headstock end of the cabinet. The motor provides two speeds forward and reverse in each range. Four ranges are available by shifting Vee belts on motor and jackshaft four-step sheaves. Motor mounts on pivoted cradle with screw adjustment for belt tension and with toggle release to facilitate shifting Vee belt. Toggle is self-locking by powerful spring and automatic latch. Cradle hand lever actuates the latch automatically and also by automatic catch holds cradle in belt release position. The jackshaft carries double sheave for driving spindle and has vertical adjustment for tensioning Vee belts. A solenoid brake applies to drum when control is set at STOP.

Jackshaft carrying double sheave which drives spindle is mounted on self-aligning ball bearings supported in bracket with height adjustment. Two binding screws, one behind each bearing housing, hold bracket in desired position. To retention belts, loosen binding screws, swing bracket up or down as required and retighten screws.

A single Vee belt, on four-step sheaves, driving jackshaft from motor, is tensioned by setting of two screw stops on which hinged motor plate rests. Vee belt is easily replaced as both sheaves are outboard of bearings.

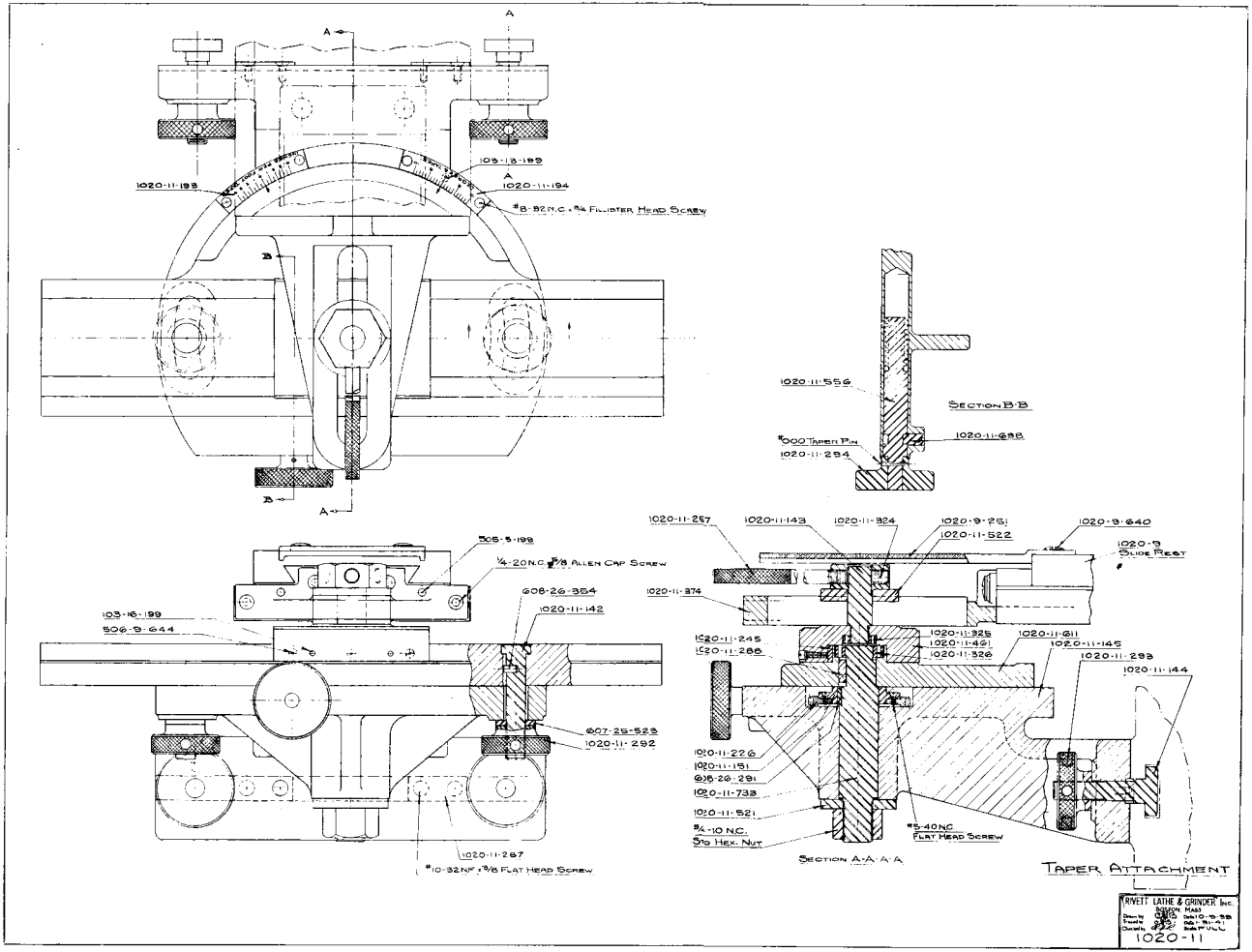
If motor is sleeve bearing type, check oil level in cups with motor tilted forward to belt release position. When oil cup covers are lifted, if oil does not flow out, fill with oil until cup overflows. This is the correct level in oil chamber. Motor chambers should be checked monthly or oftener for oil level by the same process. DRIVE SHOULD NEVER BE RUN IN BELT RELEASE POSITION, but always in locked driving position. These oilers are 'Forkup' patented control feed type, and provide against drainage of oil from motor oil chambers when in belt release position. Lubricate upper shaft bearings using grease gun on two Alemite fittings.



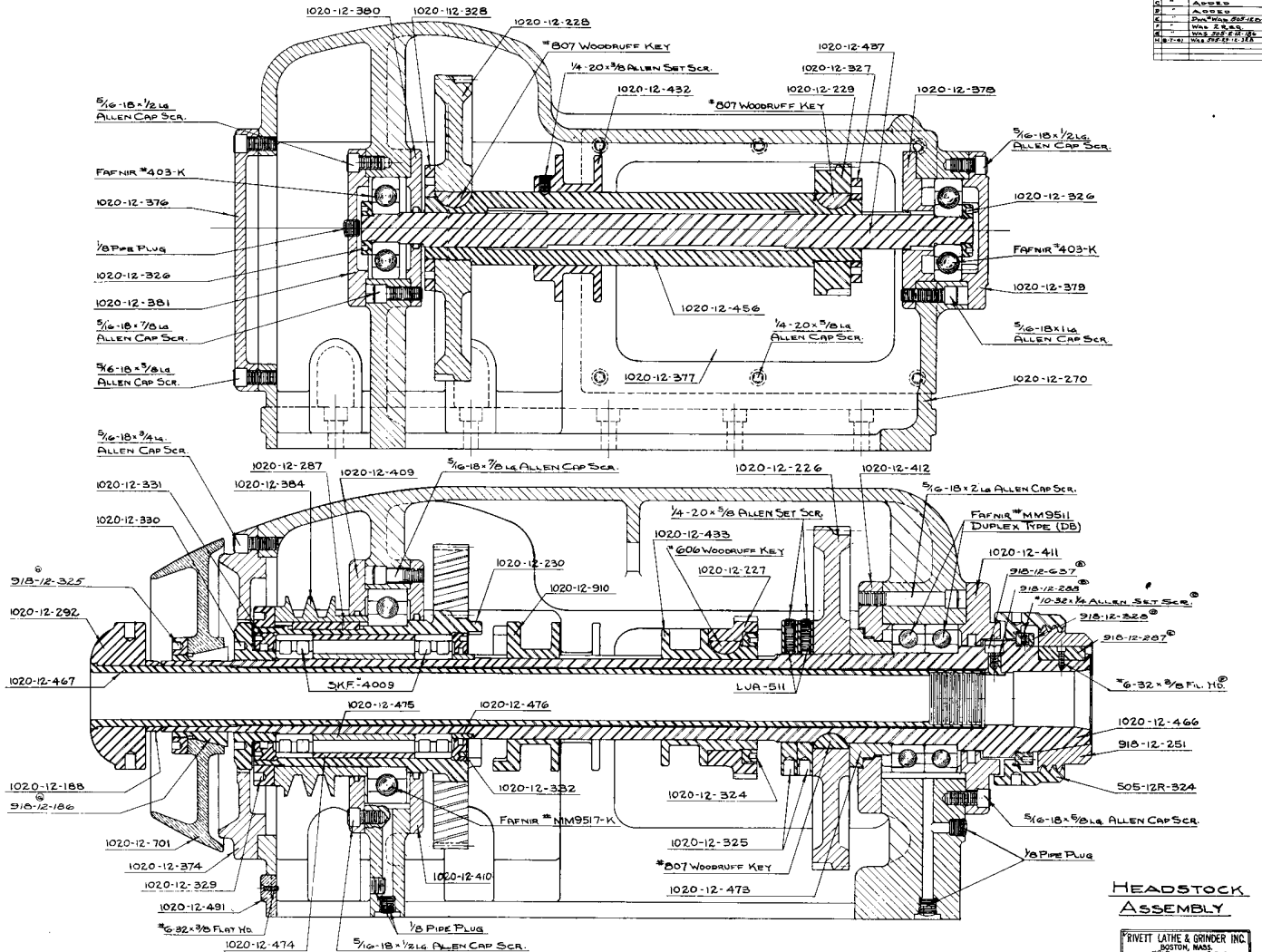
SLIDE REST ASSEMBLY

RIVETT LATHE & GRINDER INC.
BOSTON, MASS.

1020-9


A
A
1020-11-193
103-13-189
A
1020-11-194
#8-32 N.C. x 3/4 Fillister Head Screw
B
B
A
1020-11-556
Section B-B
#000 Taper Pin
1020-11-294
1020-11-288
505-5-199
1/4-20 N.C. 5/8 Allen Cap Screw
608-26-354
1020-11-142
103-16-199
506-9-644
607-25-523
1020-11-292
1020-11-287
#10-32 N.F. x 5/8 Flat Head Screw
1020-11-257
1020-11-143
1020-11-324
1020-9-251
1020-11-522
1020-9-640
1020-9 Slide Rest
1020-11-374
1020-11-325
1020-11-491
1020-11-326
1020-11-611
1020-11-145
1020-11-293
1020-11-144
1020-11-245
1020-11-286
1020-11-226
1020-11-151
608-26-291
1020-11-732
1020-11-521
3/4-10 N.C. Std Hex. Nut
#5-40 N.C. Flat Head Screw
Section A-A-A-A
Taper Attachment
Arvett Lathe & Grinder Inc.
Boston Mass.
1020-11

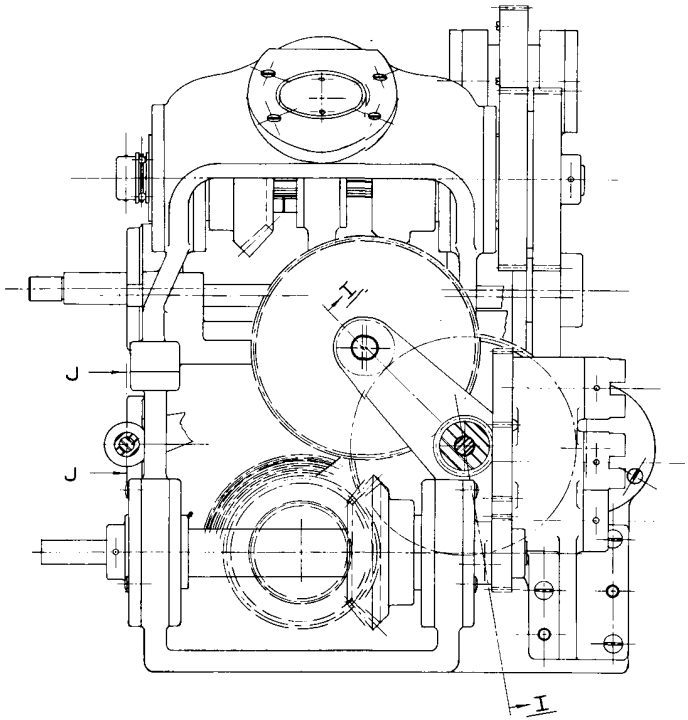
A	2-16-41	ADDED
B	"	WAS FAJ 185 ADD
C	"	ADDED
D	"	ADDED
E	"	DWG WAS 807-IED-381
F	"	WAS 2 REQ
G	"	WAS 2025-12-184
H	8-7-41	WAS 2025-12-188



HEADSTOCK ASSEMBLY

RIVETT LATHE & GRINDER INC.
BOSTON, MASS.
Drawn by C.P.C. Date 2-5-41
Traced by C.P.C. Date 2-12-41
Checked by [illegible] Date [illegible]

1020-12

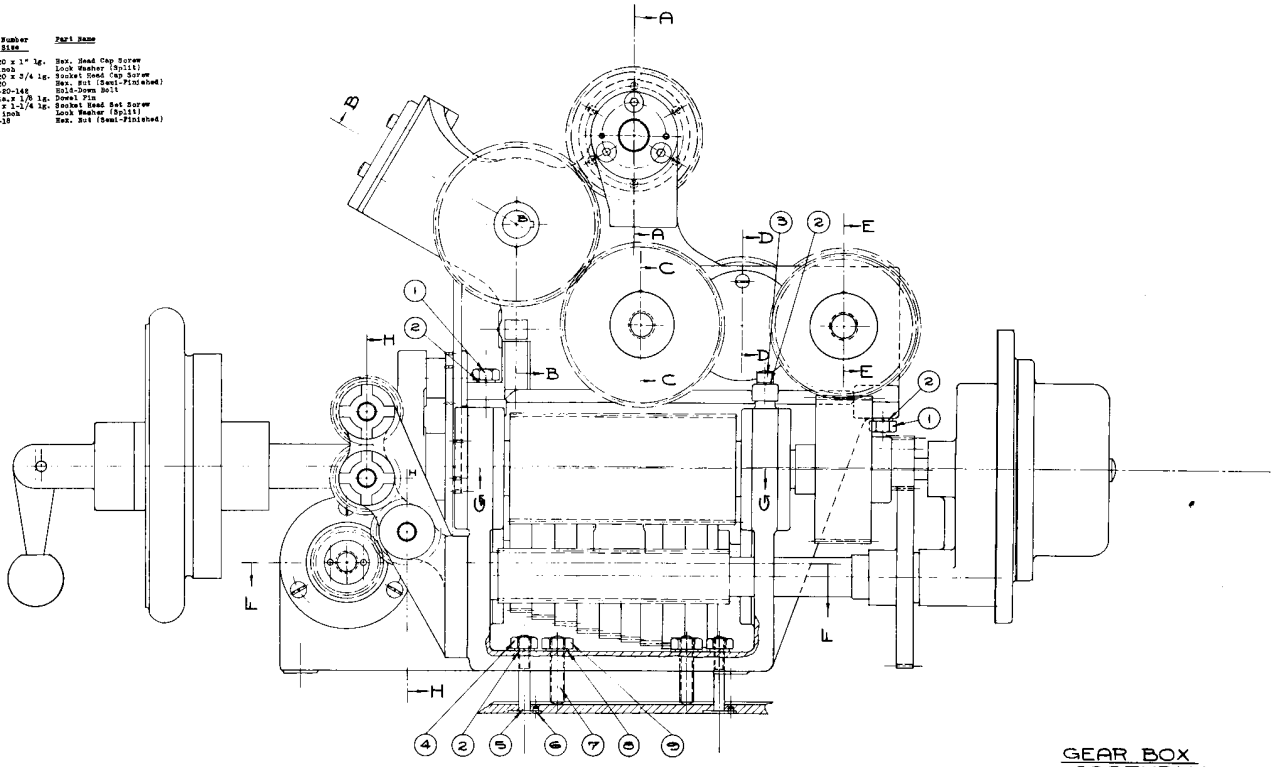


GEAR BOX
ASSEMBLY

RIVETT LATHE & GRINDER INC.
BOSTON, MASS.
1020-20

SHEET #1 of 5
FRONT VIEW

No.	Part Number or Size	Part Name
1	1/4-20 x 1" lg.	Hex. Head Cap Screw
2	1/4 inch	Lock Washer (Split)
3	1/4-20 x 3/4 lg.	Socket Head Cap Screw
4	1/4-20	Hex. Nut (Semi-Finished)
5	1020-20-14S	Hold-Down Bolt
6	1/8 dia.x 1/8 lg.	Dowel Pin
7	5/16-18 x 1-1/4 lg.	Socket Head Set Screw
8	5/16 inch	Lock Washer (Split)
9	5/16-18	Hex. Nut (Semi-Finished)

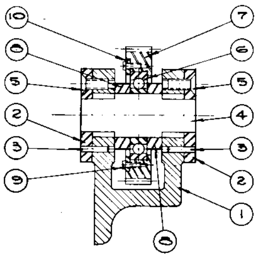


SHEET #2-45
RIGHT HAND END VIEW

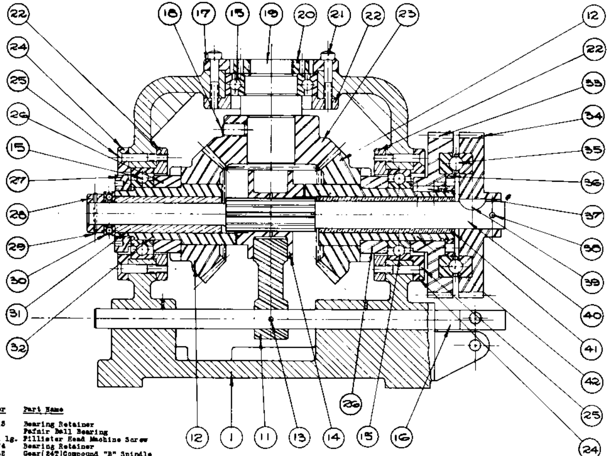
GEAR BOX ASSEMBLY

RIVETT LATHE & GRINDER INC.
BOSTON, MASS.
Drawn by A.E.K. Date 12-10-41
Traced by S.J.P. Date
Checked by A.E.K. Date 5-1-42
1020-20

No.	Part Number	Part Name
1	1020-20-146	Gear Bracket (Upper)
2	1020-20-385	Idler Gear Adjustment Plate
3	1020-20-200	Adjustment Plate Dowel
4	1020-20-447	Idler Gear Shaft
5	1/4-28 x 1/2 lg.	Socket Flat Head Screw
6	#3-10	Fafnir Ball Bearing
7	1020-20-244	Spindle to Gear Box Idler
8	1020-20-194	Idler Gear Retaining Collar
9	#6-40 x 1/4	Fillister Head Machine Screw
10	1020-20-429	Idler Gear Bearing Retainer
11	1020-20-540	Reverse Gear Yoke
12	1020-20-627	Spiral Miter Gear (R.H.)
13	#2/0 x 7/8 lg.	Taper Pin
14	1020-20-435	Reverse Shifter
15	#MM-9506	Fafnir Ball Bearing
16	1020-20-424	Clutch Control Rod
17	1020-20-388	Outside Bearing Retainer
18	1/4-20 x 1/2 lg.	Socket Head
19	1020-20-448	Idler Gear Shaft
20	1020-20-340	Idler Gear Shaft Nut
21	#10-32 x 1-1/8 lg.	Fillister Head Machine Screw
22	1020-20-428	Inside Bearing Retainer
23	1020-20-626	Spiral Miter Gear (L.H.)
24	1020-20-389	Outside Thrust Plate
25	#10-32 x 1 lg.	Flat Head Machine Screw
26	1020-20-195	Bevel Gear Locking Collar
27	1020-20-337	Reversing Gear Sleeve Nut
28	1020-20-192	Reversing Gear Shaft Collar
29	#3/0 x 1 lg.	Taper Pin
30	#BW-1/2	Norma Hoffmann Thrust Bearing
31	1020-20-117	Short Sleeve Bearing
32	1020-20-468	Reversing Gear Sleeve
33	1020-20-624	Reverse Driving Gear
34	1020-20-623	Reverse Driven Gear
35	#4315	Fafnir Thrust Bearing
36	1020-20-338	Reversing Gear Driving Sleeve Nut
37	1020-20-671	Driving Gear Key
38	#1 x 1-1/8 lg.	Taper Pin
39	#5	Woodruff Key
40	1020-20-446	Reverse Clutch Shaft
41	1020-20-118	Long Sleeve Bearing
42	1020-20-469	Reversing Gear Sleeve

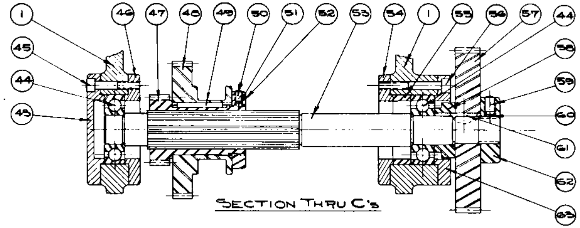


SECTION THRU A's

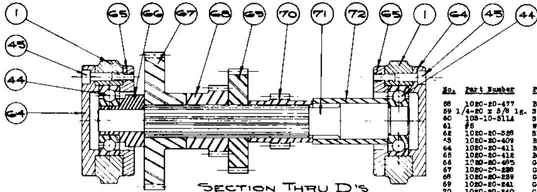


SECTION THRU B's

No.	Part Number	Part Name
43	1020-20-413	Bearing Retainer
44	#7203	Fafnir Ball Bearing
45	#10-32 x 1 lg.	Fillister Head Machine Screw
46	1020-20-374	Bearing Retainer
47	1020-20-242	Gear(24T)Compound "B" Spindle
48	1020-20-243	Gear(48T)Compound "B" Spindle
49	1020-20-290	Key Compound "B" Spindle
50	#10-32 x 1/4 lg.	Socket Head Set Screw
51	103-4B-411	Set Screw Tip
52	1020-20-326	Spindle Nut Compound "B"
53	1020-20-438	Compound "B" Shaft
54	1020-20-410	Bearing Retainer
55	1020-20-482	Compound "B" Bearing Spacer
56	#10-32 x 1-3/8 lg.	Fillister Head Machine Screw
57	1020-20-613	Compound "B" Driven Gear

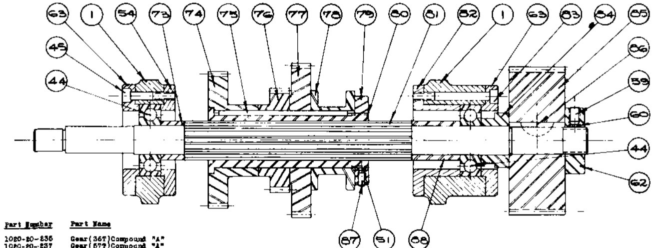


SECTION THRU C's



SECTION THRU D's

No.	Part Number	Part Name
58	1020-20-477	Bearing Spacer
59	1/4-20 x 3/8 lg.	Socket Head Set Screw
60	103-10-511A	Set Screw Tip
61	#5	Woodruff Key
62	1020-20-328	Shaft Nut
63	1020-20-409	Bearing Retainer
64	1020-20-411	Bearing Retainer
65	1020-20-412	Bearing Retainer
66	1020-20-485	Gear Spacer (Short)
67	1020-20-238	Gear(48T)Compound "C"
68	1020-20-239	Gear(24T)Compound "C"
69	1020-20-241	Gear(36T)Compound "C"
70	1020-20-240	Gear(18T)Compound "C"
71	1020-20-440	Compound "C" Shaft
72	1020-20-484	Gear Spacer (Long)
73	1020-20-475	Bearing Spacer
74	1020-20-236	Gear(48T)Compound "A"
75	1020-20-289	Key Compound "A" Spindle



SECTION THRU E's

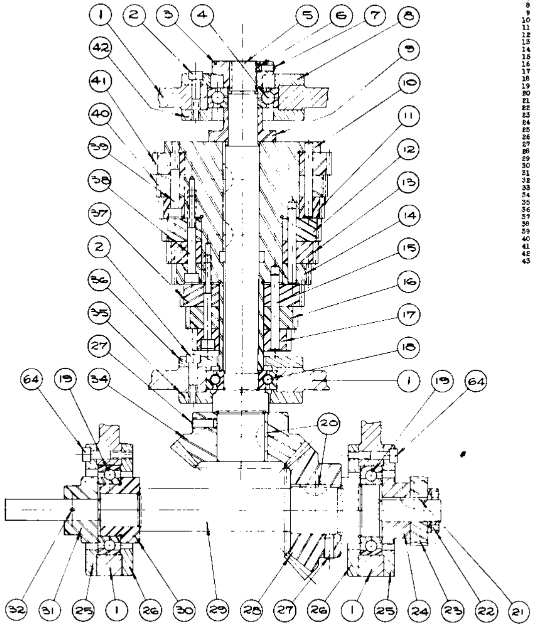
No.	Part Number	Part Name
76	1020-20-235	Gear(36T)Compound "A"
77	1020-20-237	Gear(57T)Compound "A"
78	1020-20-432	Shifter Compound "A"
79	1020-20-325	Spindle Nut (Compound "A")
80	1020-20-466	Spindle Compound "A"
81	1020-20-439	Compound "A" Shaft
82	1020-20-376	Bearing Retainer
83	#10-32 x 1-3/4 lg.	Fillister Head Machine Screw
84	1020-20-476	Bearing Spacer
85	1020-20-611	Driving Gear
86	#9	Woodruff Key
87	#10-32 x 5/8 lg.	Socket Head Set Screw
88	1020-20-478	Bearing Spacer

SHEET #3 of 5

SECTIONS THRU UPPER BRACKET

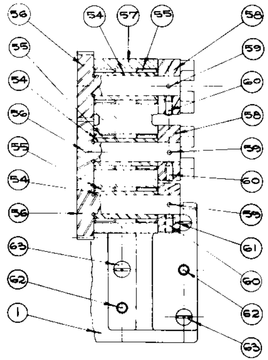
GEAR BOX
ASSEMBLY

RIVETT LATHE & GRINDER INC.
BOSTON, MASS.
Drawn by A.E.K. Date 12-9-41
Traced by
Checked by Scale Full
1020-20

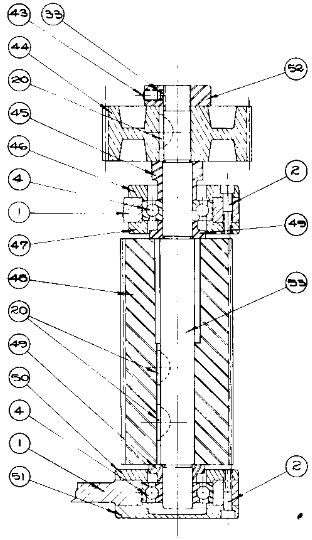


SECTION THRU F'S

No.	Part Number	Part Name
1	1020-20-145	Gear Bracket (Lower)
2	#10-32 x 7/8 lg.	Fillister Head Machine Screw
3	1020-20-324	Shaft Nut
4	#7203	Fafnir Ball Bearing
5	1020-20-437	Shaft for Gear Nest
6	103-4B-511	Set Screw Tip
7	#10-32 x 3/8 lg.	Socket Head Set Screw
8	1020-20-423	Bearing Retainer
9	1020-20-474	Sleeve Spacer
10	1020-20-467	Gear Box Spindle
11	1020-20-232	Gear for Nest (72T)
12	1020-20-231	Gear for Nest (69T)
13	1020-20-230	Gear for Nest (66T)
14	1020-20-229	Gear for Nest (60T)
15	1020-20-199	Dowel for Gear Nest
16	1020-20-227	Gear for Nest (48T)
17	1020-20-226	Gear for Nest (42T)
18	#9504K	Fafnir Ball Bearing
19	#MM9506	Fafnir Ball Bearing
20	#9	Hi-Pro Key
21	#5	Woodruff Key
22	1020-20-330	Bevel Gear Shaft Nut
23	1020-20-814	Carriage Driving Gear
24	1020-20-484	Bevel Shaft Driving Spacer
25	1020-20-379	Bearing Retainer
26	1020-20-378	Bearing Retainer
27	1/4-20 x 1/2 lg.	Socket Head Set Screw
28	1020-20-825	Spiral Miter Gear (Right)
29	1020-20-442	Bevel Gear Shaft
30	1020-20-483	Bevel Shaft Spacer
31	1020-20-1[illegible]3	Bevel Shaft Collar
32	#2/0 x 1-[illegible]/4	Taper Pin
33	103-10-511A	Set Screw Tip
34	1020-20-828	Spiral Miter Gear (Left)
35	1020-20-421	Bearing Retainer
36	1020-20-420	Bearing Retainer
37	1020-20-228	Gear for Nest (54T)
38	#10-32 x 1-3/4 lg.	Fillister Head Machine Screw
39	#10-32 x 1-1/2 lg.	Fillister Head Machine Screw
40	1020-20-235	Gear for Nest (75T)
41	1020-20-234	Gear for Nest (78T)
42	1020-20-422	Bearing Retainer
43	1/4-20 x 3/8 lg.	Socket Head Set Screw



SECTION THRU H'S



SECTION THRU G'S

No.	Part Number	Part Name
44	1020-20-812	Driven Gear
45	1020-20-480	Driven Gear Spacer
46	1020-20-419	Bearing Retainer
47	1020-20-418	Bearing Retainer
48	1020-20-822	Tumbler Driving Gear
49	1020-20-481	Tumbler Driving Gear Spacer
50	1020-20-416	Bearing Retainer
51	1020-20-417	Bearing Retainer
52	1020-20-328	Shaft Nut
53	1020-20-444	Tumbler Driving Gear Shaft
54	1020-20-462	Driving Gear Sleeve
55	#B-108	Torrington Needle Bearing
56	1020-20-815	Driving Gear
57	1020-20-146	Carriage Drive Bracket
58	1020-20-284	Clutch Jaw
59	#1 x 1-3/8	Taper Pin
60	#10-32 x 3/8	Socket Head Set Screw
61	1020-20-189	Idler Gear Collar
62	608-23-201	Dowel
63	1/4-20 x 3/4 lg.	Fillister Head Cap Screws
64	1/4-[illegible] x 1 lg.	Fillister Head Cap Screws

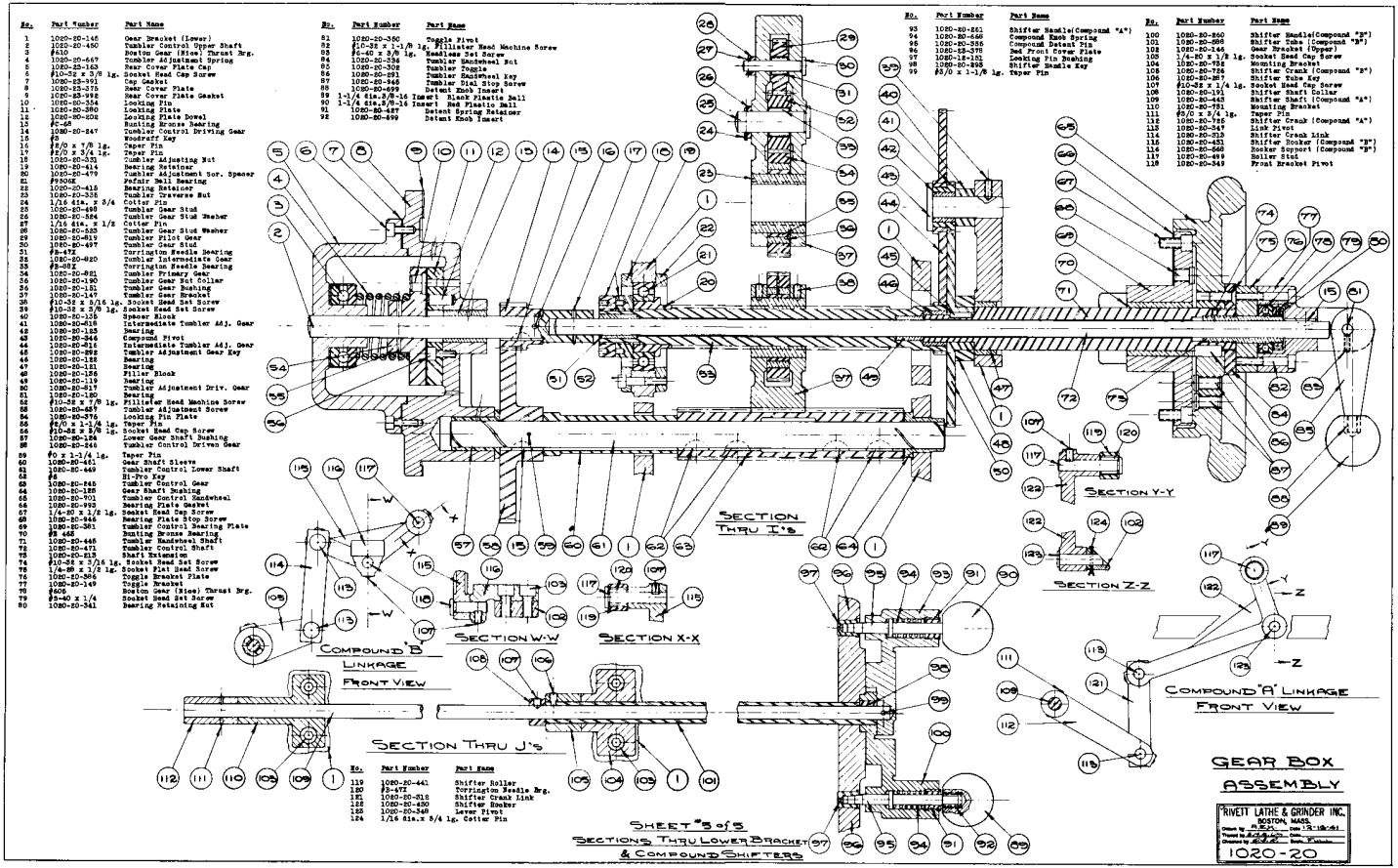
GEAR BOX
ASSEMBLY

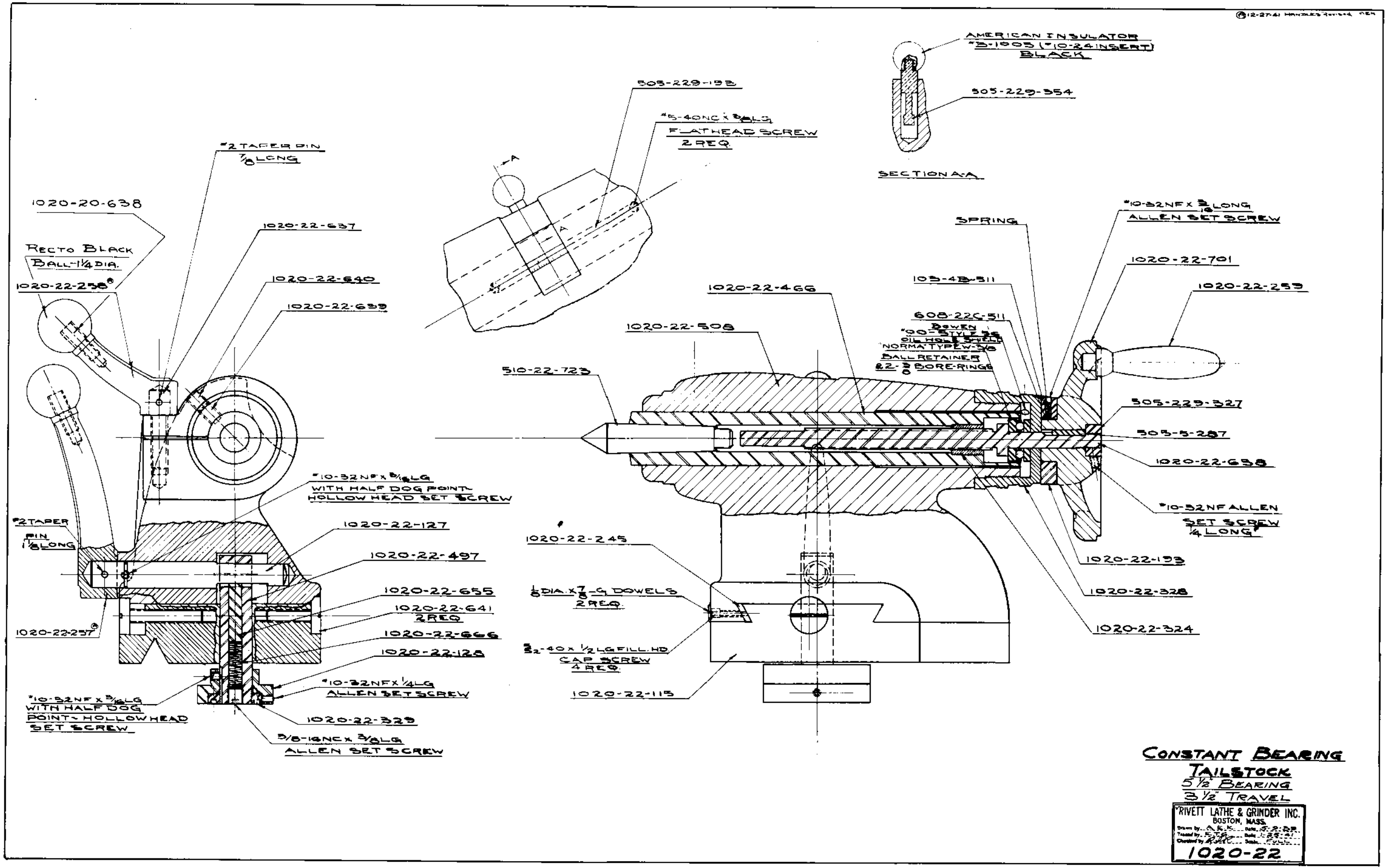
RIVETT LATHE & GRINDER INC.
BOSTON, MASS.

Drawn by AEK Date 12-12-41
Traced by S.M.[illegible] Date
Checked by [illegible] Scale [illegible]

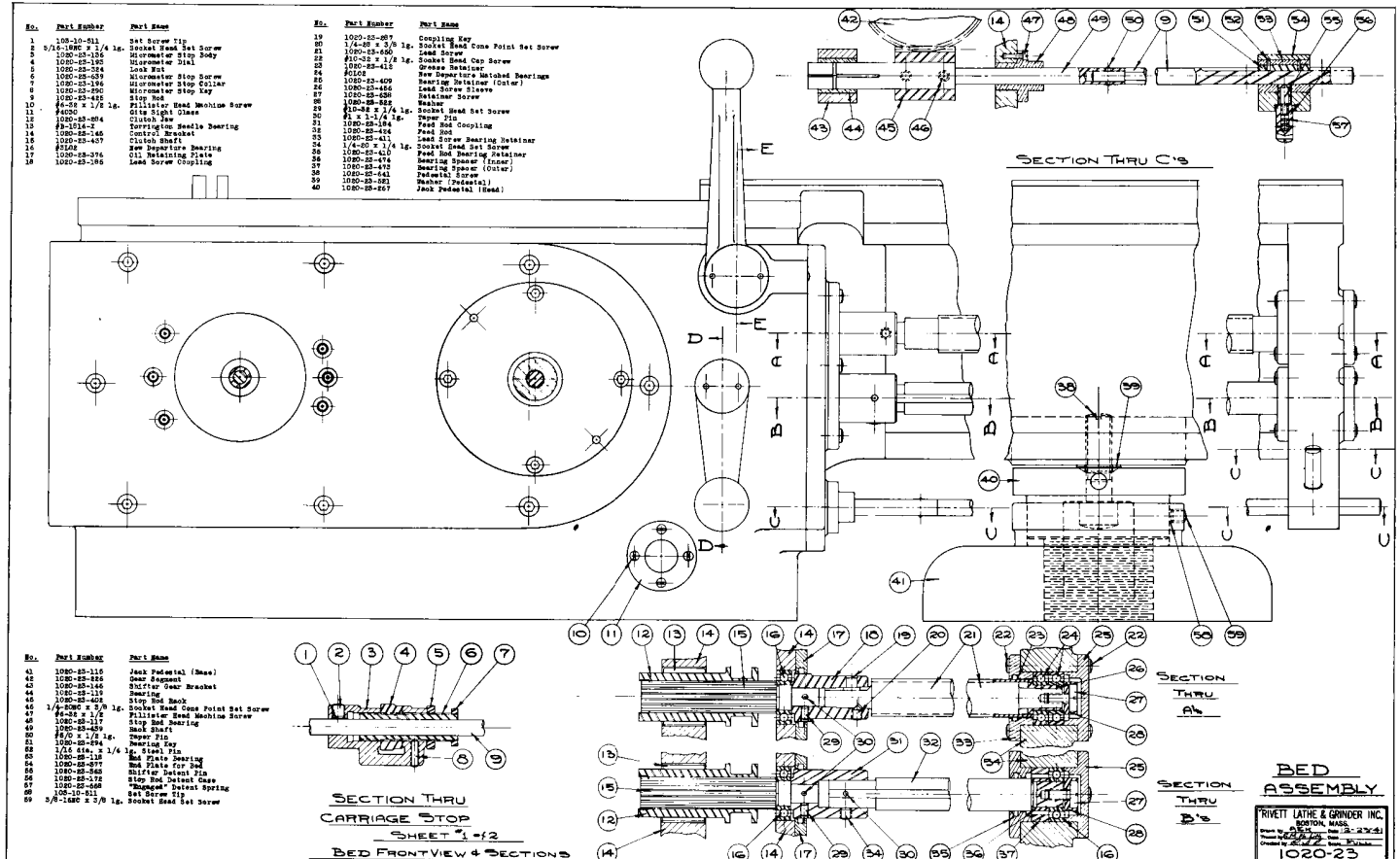
1020-20

SHEET #4 of 5
SECTIONS THRU LOWER BRACKET


No. Part Number Part Name
1 1020-20-145 Gear Bracket (Lower)
2 1020-20-460 Tumbler Control Upper Shaft
3 #610 Boston Gear (Nine) Thrust Brg.
4 1020-20-667 Tumbler Adjustment Spring
5 1020-23-163 Rear Cover Plate Cap
6 #10-32 x 3/8 lg. Socket Head Cap Screw
7 1020-23-391 Cap Gasket
8 1020-23-375 Rear Cover Plate
9 1020-23-998 Rear Cover Plate Gasket
10 1020-20-554 Locking Pin
11 1020-20-380 Locking Plate
12 1020-20-206 Locking Plate Dowel
13 #C-68 Bunting Bronze Bearing
14 1020-20-247 Tumbler Control Driving Gear
15 #8 Woodruff Key
16 #8/0 x 7/8 lg. Taper Pin
17 #8/0 x 3/4 lg. Taper Pin
18 1020-20-531 Tumbler Adjusting Nut
19 1020-20-414 Bearing Retainer
20 1020-20-479 Tumbler Adjustment Scr. Spacer
21 #3906E Fafnir Ball Bearing
22 1020-20-415 Bearing Retainer
23 1020-20-535 Tumbler Traverse Nut
24 1/16 dia. x 3/4 Cotter Pin
25 1020-20-489 Tumbler Gear Stud
26 1020-20-584 Tumbler Gear Stud Washer
27 1/16 dia. x 1/2 Cotter Pin
28 1020-20-585 Tumbler Gear Stud Washer
29 1020-20-519 Tumbler Pilot
30 1020-20-497 Tumbler Gear Stud
31 #B-4FZ Torrington Needle Bearing
32 1020-20-420 Tumbler Intermediate Gear
33 #B-6FZ Torrington Needle Bearing
34 1020-20-421 Tumbler Primary Gear
35 1020-20-190 Tumbler Gear Nut Collar
36 1020-20-181 Tumbler Gear Bushing
37 1020-20-147 Tumbler Gear Bracket
38 #10-32 x 3/16 lg. Socket Head Set Screw
39 #10-32 x 3/8 lg. Socket Head Set Screw
40 1020-20-335 Spacer Block
41 1020-20-418 Intermediate Tumbler Adj. Gear
42 1020-20-183 Bearing
43 1020-20-344 Compound Pivot
44 1020-20-416 Intermediate Tumbler Adj. Gear
45 1020-20-382 Tumbler Adjustment Gear Key
46 1020-20-188 Bearing
47 1020-20-181 Bearing
48 1020-20-186 Filler Block
49 1020-20-119 Bearing
50 1020-20-417 Tumbler Adjustment Driv. Gear
51 1020-20-180 Bearing
52 #10-32 x 7/8 lg. Filister Head Machine Screw
53 1020-20-457 Tumbler Adjustment Screw
54 1020-20-376 Locking Pin Plate
55 #4/0 x 1-1/4 lg. Taper Pin
56 #10-32 x 5/8 lg. Socket Head Cap Screw
57 1020-20-184 Lower Gear Shaft Bushing
58 1020-20-244 Tumbler Control Driven Gear
59 #0 x 1-1/4 lg. Taper Pin
60 1020-20-453 Gear Shaft Sleeve
61 1020-20-449 Tumbler Control Lower Shaft
62 #8 Hi-Pro Key
63 1020-20-245 Tumbler Control Gear
64 1020-20-185 Gear Shaft Bushing
65 1020-20-901 Tumbler Control Handwheel
66 1020-20-998 Bearing Plate Gasket
67 1/4-20 x 1/2 lg. Socket Head Cap Screw
68 1020-20-946 Bearing Plate Stop Screw
69 1020-20-381 Tumbler Control Bearing Plate
70 #B 448 Bunting Bronze Bearing
71 1020-20-446 Tumbler Handwheel Shaft
72 1020-20-471 Tumbler Control Shaft
73 1020-20-213 Shaft Extension
74 #10-32 x 3/16 lg. Socket Head Set Screw
75 1/4-20 x 1/2 lg. Socket Flat Head Screw
76 1020-20-586 Toggle Bracket Plate
77 1020-20-149 Toggle Bracket
78 #606 Boston Gear (Nine) Thrust Brg.
79 #8-40 x 1/4 Socket Head Set Screw
80 1020-20-341 Bearing Retaining Nut
No. Part Number Part Name
82 1020-20-380 Toggle Pivot
83 #10-32 x 1-1/8 lg. Filister Head Machine Screw
85 #6-40 x 3/8 lg. Headless Set Screw
84 1020-20-334 Tumbler Handwheel Nut
85 1020-20-308 Tumbler Toggle
86 1020-20-291 Tumbler Handwheel Key
87 1020-20-946 Tumbler Dial Stop Screw
88 1020-20-699 Detent Knob Insert
89 1-1/4 dia.3/8-16 Insert Black Plastic Ball
90 1-1/4 dia.5/8-16 Insert Red Plastic Ball
91 1020-20-427 Detent Spring Retainer
92 1020-20-699 Detent Knob Insert
No. Part Number Part Name
93 1020-20-261 Shifter Handle(Compound "A")
94 1020-20-446 Compound Knob Spring
95 1020-20-355 Compound Detent Pin
96 1020-23-375 Rod Front Cover Plate
97 1020-18-181 Locking Pin Bushing
98 1020-20-898 Shifter Handle Key
99 #3/0 x 1-1/8 lg. Taper Pin
No. Part Number Part Name
100 1020-20-260 Shifter Handle(Compound "B")
101 1020-20-698 Shifter Tube (Compound "B")
102 1020-20-346 Gear Bracket (Upper)
103 1/4-20 x 1/8 lg. Socket Head Cap Screw
104 1020-20-702 Mounting Bracket
105 1020-20-726 Shifter Crank (Compound "B")
106 1020-20-267 Shifter Tube Key
107 #10-24 x 1/4 lg. Socket Head Cap Screw
108 1020-20-191 Shifter Shaft Collar
109 1020-20-443 Shifter Shaft (Compound "A")
110 1020-20-781 Mounting Bracket
111 #3/0 x 5/4 lg. Taper Pin
112 1020-20-726 Shifter Crank (Compound "A")
113 1020-20-347 Shifter Link
114 1020-20-212 Shifter Crank Link
115 1020-20-451 Shifter Rocker (Compound "B")
116 1020-20-660 Rocker Support (Compound "B")
117 1020-20-419 Roller Stud
118 1020-20-349 Front Bracket Pivot
No. Part Number Part Name
119 1020-20-441 Shifter Roller
120 #B-4FZ Torrington Needle Brg.
121 1020-20-216 Shifter Crank Link
122 1020-20-430 Shifter Rocker
123 1020-20-346 Lever Pivot
124 1/16 dia.x 3/4 lg. Cotter Pin
SECTION W-W
SECTION X-X
SECTION Y-Y
SECTION Z-Z
SECTION THRU I's
SECTION THRU J's
COMPOUND 'B' LINKAGE FRONT VIEW
COMPOUND 'A' LINKAGE FRONT VIEW
GEAR BOX ASSEMBLY
SHEET 3 of 5
SECTIONS THRU LOWER BRACKET & COMPOUND SHIFTERS
RIVETT LATHE & GRINDER INC.
BOSTON, MASS.
1020-20



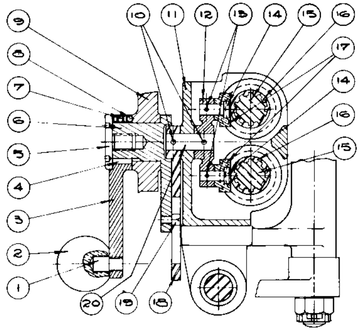
AMERICAN INSULATOR
#B-1005 (#10-24 INSERT)
BLACK
505-229-354
SECTION A-A
505-229-193
#5-40NC x 3/8 LG
FLATHEAD SCREW
2 REQ.
#2 TAPER PIN
7/8 LONG
1020-20-638
1020-22-637
RECTO BLACK
BALL-1 1/4 DIA.
1020-22-258
1020-22-640
1020-22-639
SPRING
#10-32NF x 3/16 LONG
ALLEN SET SCREW
1020-22-701
1020-22-259
105-4B-511
1020-22-466
608-22C-511
1020-22-508
510-22-723
BALL RETAINER
505-229-327
505-5-287
1020-22-698
#10-32NF ALLEN
SET SCREW
1/4 LONG
#10-32NF x 3/16 LG
WITH HALF DOG POINT
HOLLOW HEAD SET SCREW
1020-22-127
#2 TAPER
PIN
1 1/8 LONG
1020-22-497
1020-22-245
1020-22-193
1020-22-655
1020-22-641
2 REQ
1020-22-666
1020-22-128
1020-22-257
1020-22-328
1020-22-324
2 REQ.
4 REQ.
#10-32NF x 1/4 LG
ALLEN SET SCREW
1020-22-115
#10-32NF x 3/16 LG
WITH HALF DOG
POINT - HOLLOW HEAD
SET SCREW
1020-22-329
5/8-16NC x 3/8 LG
ALLEN SET SCREW
CONSTANT BEARING
TAILSTOCK
5 1/2" BEARING
3 1/2" TRAVEL
RIVETT LATHE & GRINDER INC.
BOSTON, MASS.
1020-22


No. Part Number Part Name
1 108-10-511 Set Screw Tip
2 5/16-16NC x 1/4 lg. Socket Head Set Screw
3 1020-23-136 Micrometer Stop Body
4 1020-23-135 Micrometer Dial
5 1020-23-134 Lock Nut
6 1020-23-139 Micrometer Stop Screw
7 1020-23-196 Micrometer Stop Collar
8 1020-23-250 Micrometer Stop Key
9 1020-23-425 Stop Rod
10 #6-32 x 1/2 lg. Fillister Head Machine Screw
11 #4030 Gits Sight Glass
12 1020-23-804 Clutch Key
13 #B-1614-Z Torrington Needle Bearing
14 1020-23-145 Control Bracket
15 1020-23-407 Clutch Shaft
16 #5L02 New Departure Bearing
17 1020-23-376 Oil Retaining Plate
18 1020-23-186 Lead Screw Coupling
No. Part Number Part Name
19 1020-23-857 Coupling Key
20 1/4-28 x 3/8 lg. Socket Head Cone Point Set Screw
21 1020-23-650 Lead Screw
22 #10-32 x 1/2 lg. Socket Head Cap Screw
23 1020-23-412 Grease Retainer
24 #5L02 New Departure Matched Bearings
25 1020-23-409 Bearing Retainer (Outer)
26 1020-23-456 Lead Screw Sleeve
27 1020-23-658 Retainer Screw
28 1020-23-822 Washer
29 #10-32 x 1/4 lg. Socket Head Set Screw
30 #3 x 1-3/4 lg. Taper Pin
31 1020-23-194 Feed Rod Coupling
32 1020-23-404 Feed Rod
33 1020-23-411 Lead Screw Bearing Retainer
34 1/4-20 x 1/4 lg. Socket Head Set Screw
35 1020-23-410 Feed Rod Bearing Retainer
36 1020-23-474 Bearing Spacer (Inner)
37 1020-23-473 Bearing Spacer (Outer)
38 1020-23-541 Pedestal Screw
39 1020-23-821 Washer (Pedestal)
40 1020-23-267 Jack Pedestal (Head)
No. Part Number Part Name
41 1020-23-116 Jack Pedestal (Base)
42 1020-23-826 Gear Segment
43 1020-23-146 Shifter Gear Bracket
44 1020-23-119 Bearing
45 1020-23-402 Stop Rod Rack
46 1/4-20NC x 3/8 lg. Socket Head Cone Point Set Screw
47 #6-32 x 1/2 Fillister Head Machine Screw
48 1020-23-117 Stop Rod Bearing
49 1020-23-459 Rack Shaft
50 #8/0 x 1/8 lg. Taper Pin
51 1020-23-894 Bearing Key
52 1/16 dia. x 1/4 lg. Steel Pin
53 1020-23-118 End Plate Bearing
54 1020-23-877 End Plate for Rod
55 1020-23-548 Stop Detent Pin
56 1020-23-172 Stop Rod Detent Case
57 1020-23-668 "Engaged" Detent Spring
58 108-10-511 Set Screw Tip
59 3/8-16NC x 3/8 lg. Socket Head Set Screw
SECTION THRU C'S
SECTION THRU A's
SECTION THRU B's
SECTION THRU CARRIAGE STOP
SHEET "1 of 2
BED FRONT VIEW & SECTIONS
BED ASSEMBLY
RIVETT LATHE & GRINDER INC.
BOSTON, MASS.
1020-23

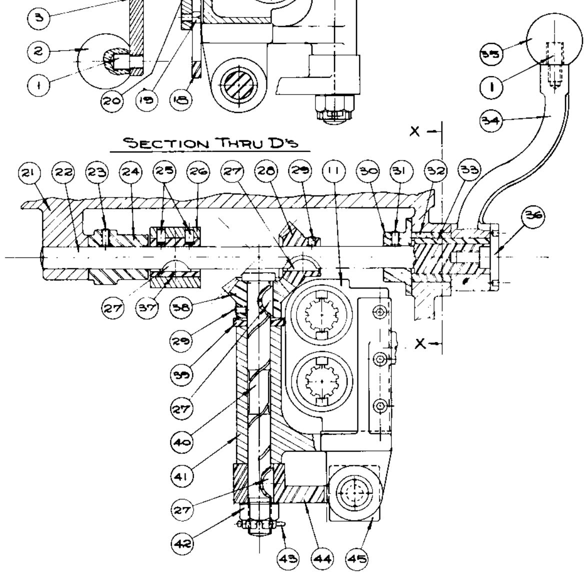
No.	Part Number	Part Name
1	1020-20-638	Insert Screw
2	1-1/4" dia.-3/8-16	"Recto" Black Plastic Ball
3	1020-23-257	Shifting Handle
4	1020-23-288	Shifting Handle Key
5	2020-23-637	Retaining Screw
6	1020-23-304	Shifting Lever
7	1020-23-669	Detent Spring
8	1/8 dia.	Hard Steel Ball
9	1020-23-570	Bed
10	#2/0 x 3/4 lg.	Taper Pin
11	1020-23-145	Control Bracket
12	1020-23-430	Shifter Rocker
13	#3/0 x 1/2 lg.	Taper Pin
14	1020-23-347	Rocker Shoe Pivot
15	1020-23-437	Clutch Shaft
16	1020-23-284	Clutch Jaw
17	1020-23-461	Rocker Shoe
18	1020-23-305	Second Shifting Lever
19	1020-23-354	Rider Pin
20	1020-23-348	Rocker Pivot
21	1020-23-570	Bed
22	1020-23-440	Shifter Shaft
23	#10-32 x 3/8 lg.	Socket Head Set Screw
24	1020-23-192	Thrust Collar
25	3/16 dia. x 3/8 lg.	Pin
26	1020-23-420	Clutch Arm

No.	Part Number	Part Name
27	#5	Hi-Pro Key
28	1020-23-227	Bevel Gear
29	#10-32 x 3/16 lg.	Socket Head Set Screw
30	1020-23-191	Thrust Collar
31	#10-32 x 1/4 lg.	Socket Head Set Screw
32	1020-23-419	Detent Ring
33	1020-23-293	Shifter Shaft Key
34	1020-23-269	Control Handle
35	1-1/4 dia.-3/8-16	Black Plastic Ball
36	1020-23-643	Control Handle Screw
37	1020-23-421	Clutch Arm Ring
38	1020-23-228	Bevel Gear
39	1020-23-524	Thrust Washer
40	1020-23-438	Gear Shaft
41	1020-23-146	Shifter Gear Bracket
42	1/2-20 N.F.	S.A.E. Castle-Nut
43	1/8 dia. x 1 lg.	Cotter Pin
44	1020-23-226	Gear Segment
45	1020-23-402	Stop Rod Rack
46	1020-23-368	Clutch Arm Pin
47	1020-20-146	Gear Bracket (Upper)
48	1020-23-525	Clutch Arm Washer
49	1/16 dia. x 1/2 lg.	Cotter Pin
50	1020-20-424	Clutch Control Rod
51	1020-23-728	Clutch Link
52	1/16 dia. x 1 lg.	Cotter Pin

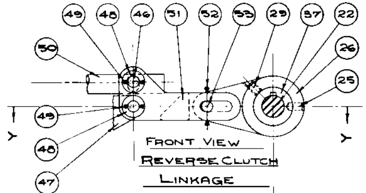
No.	Part Number	Part Name
53	1020-23-369	Clutch Link Pin
54	1020-23-363	Shifter Detent Pin
55	1020-23-667	"Neutral" Detent Spring
56	1/4-28 x 3/16 lg.	Socket Head Set Screw



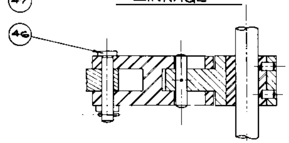
SECTION THRU D'S



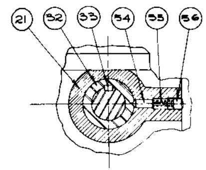
SECTION THRU E'S



FRONT VIEW
REVERSE CLUTCH
LINKAGE



SECTION THRU Y'S



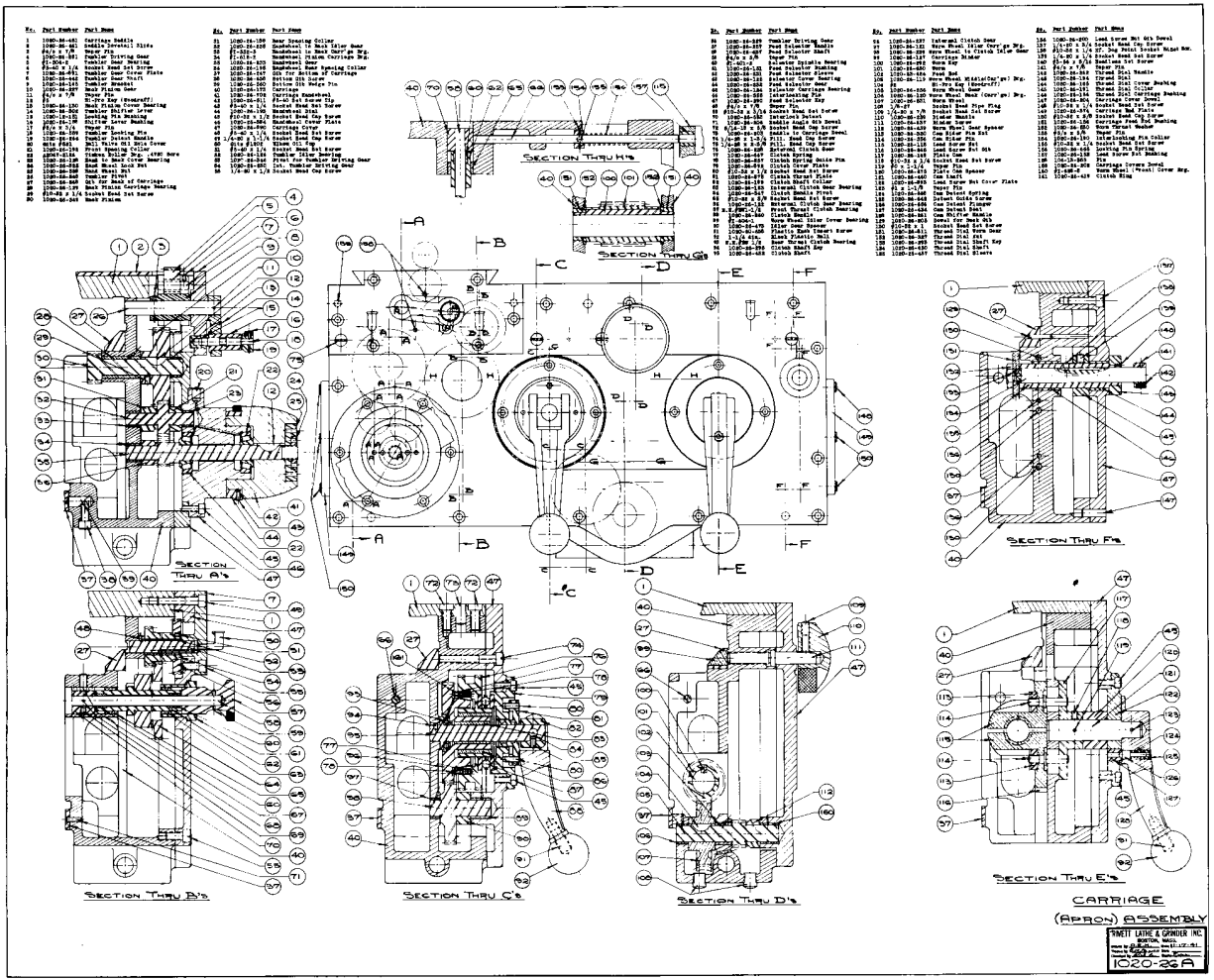
SECTION THRU X'S

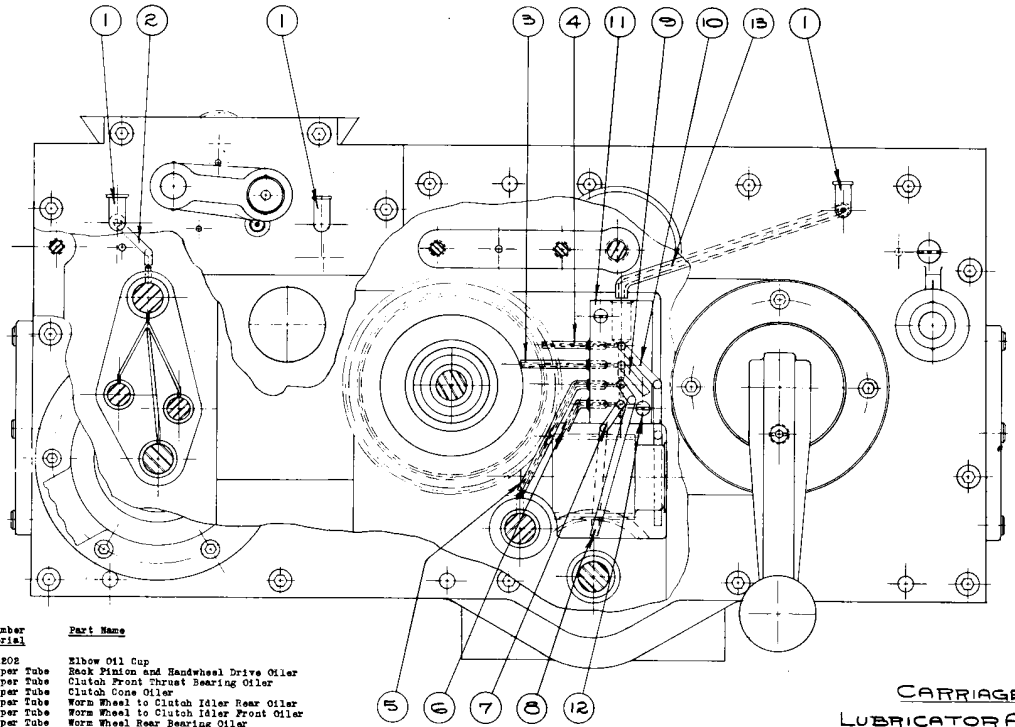
SHEET #2 OF 2
SECTIONS

BED
ASSEMBLY

RIVETT LATHE & GRINDER INC.
BOSTON, MASS.
Drawn by A.E.K. Date 12-26-41
Traced by S.M.M.L.K. Date
Checked by R.A.R. Scale Full size

1020-23


SECTION THRU H-H
SECTION THRU G-G
SECTION THRU A-A
SECTION THRU B-B
SECTION THRU C-C
SECTION THRU D-D
SECTION THRU E-E
SECTION THRU F-F
CARRIAGE
(APRON) ASSEMBLY
1020-22A



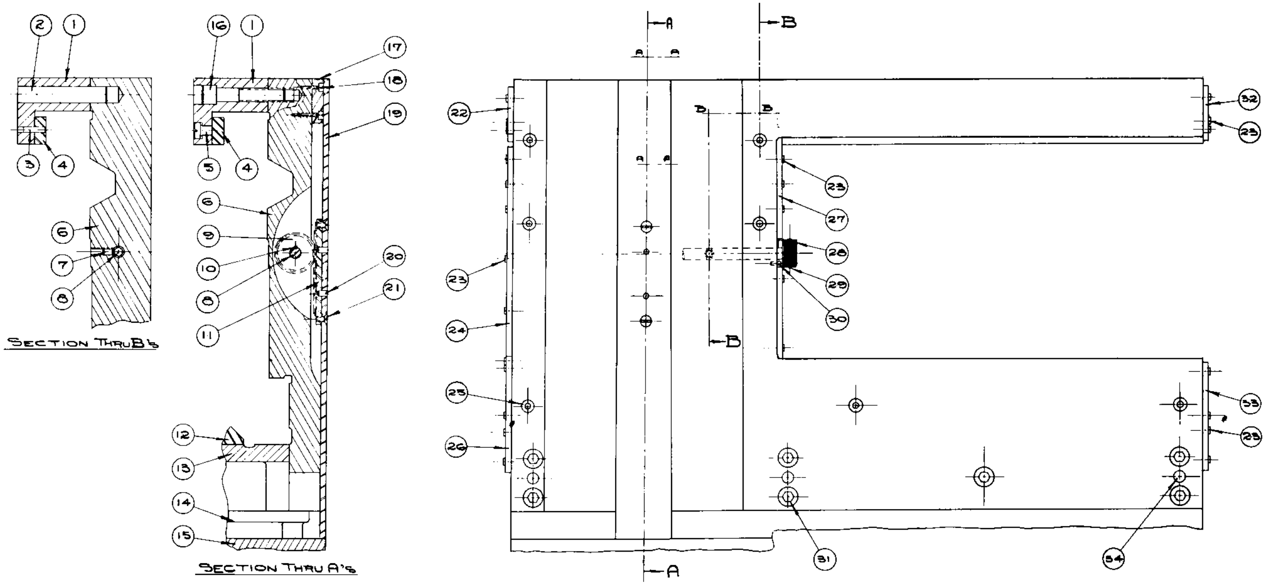
No.	Part Number or Material	Part Name
1	Gits #1202	Elbow Oil Cup
2	1/8 Copper Tube	Rack Pinion and Handwheel Drive Oiler
3	1/8 Copper Tube	Clutch Front Thrust Bearing Oiler
4	1/8 Copper Tube	Clutch Cone Oiler
5	1/8 Copper Tube	Worm Wheel to Clutch Idler Rear Oiler
6	1/8 Copper Tube	Worm Wheel to Clutch Idler Front Oiler
7	1/8 Copper Tube	Worm Wheel Rear Bearing Oiler
8	1/8 Copper Tube	Worm Wheel Middle Bearing Oiler
9	1/8 Copper Tube	Worm Wheel Front Bearing Oiler
10	1/8 Copper Tube	Rear Sump Oiler
11	1020-26-154	Lubrication Block
12	#6-32 x 3/4	Fillister Head Machine Screw
13	5/16 Copper Tube	Lubrication Block Oiler

CARRIAGE LUBRICATOR ASSEMBLY

(USE IN CONJUNCTION WITH DRAWING 1020-26A)

RIVETT LATHE & GRINDER INC.
BOSTON, MASS.
Drawn by A.E.K. Date 11-19-41
Traced by [illegible] Date
Checked by [illegible] Scale Full size

1020-26B



No.	Part Number	Part Name
1	1020-26-677	Angle for Rear of Saddle
2	1020-26-201	Saddle Angle Dowel
3	1020-26-205	Saddle Angle Gib Dowel
4	1020-26-246	Saddle Angle Gib
5	1020-26-639	Saddle Angle Gib Screw
6	1020-26-451	Carriage Saddle
7	#10-32 x 1/4	Half Dog Point Socket Head Set Screw
8	1020-26-441	Slide Rack Pinion Shaft
9	1020-26-360	Slide Rack Pinion
10	1020-26-671	Slide Rack Pinion Key
11	1020-26-401	Slide Rack
12	1020-26-248	Gib for Back of Carriage
13	1020-26-175	Carriage
14	1020-26-890	Carriage Cover
15	1020-26-891	Tumbler Gear Cover Plate
16	5/16-18 x 1-1/2	Socket Head Cap Screw
17	1020-26-135	Filler Block
18	#3-48 x 3/8	Fillister Head Machine Screw
19	1020-26-461	Saddle Dovetail Slide
20	1020-26-207	Saddle Slide Dowel
21	#6-40 x 3/16	Flat Head Machine Screw
22	1020-26-745	Wiper Clamp (Left Hand Rear)
23	#3-48 x 3/8	Fillister Head Machine Screw
24	1020-26-744	Wiper Clamp (Left Hand Center)
25	Gits #521	Ball Valve Oil Hole Cover
26	1020-26-743	Wiper Clamp (Left Hand Front)
27	1020-26-178	Wiper Clamp (Right Hand Center)
28	1020-26-294	Knob for Slide Rack Pinion Shaft
29	#4/0 x 3/4	Taper Pin
30	1020-26-358	Slide Motion Stop Pin
31	5/16-18 x 5/8	Socket Head Cap Screw
32	1020-26-179	Wiper Clamp (Right Hand Rear)
33	1020-26-177	Wiper Clamp (Right Hand Front)
34	1020-26-203	Saddle to Carriage Dowel

CARRIAGE SADDLE ASSEMBLY

(USE IN CONJUNCTION WITH DRAWING 1020-26A)

RIVETT LATHE & GRINDER INC.
BOSTON, MASS.
Drawn by A.E.K. Date 11-22-41
Traced by
Checked by
Scale Full

1020-26C

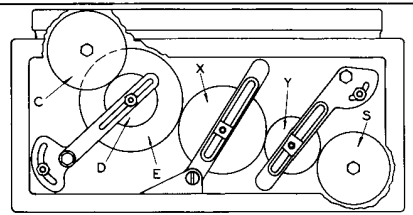
FORMULA:- A × B × Z × P = NO. THREADS PER INCH.

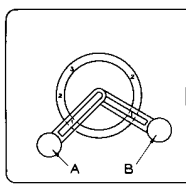
LEVER	POSITION	VALUE
A	1	2
A	2	3
A	3	1
B	1	2
B	2	3

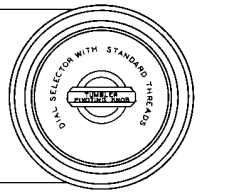
WHERE:- A = VALUE OF COMPOUND A
B = VALUE OF COMPOUND B

$Z = \frac{D}{C} \times \frac{S}{E}$ = VALUE OF TRAIN

P = NO. OF TH'DS PER INCH ON LEAD SCREW = 8
C = NO. TEETH IN GEAR C
D = NO. TEETH IN GEAR D
E = NO. TEETH IN GEAR E
S = NO. TEETH IN GEAR S







NO. OF TH'DS	STD	PICK OFF	LEVERS A	LEVERS B	C	D	E	X IDLER	Y IDLER	S	Z VALUE OF TRAIN
1			3	2	120	80	96	90	84	48	1/8
1 1/8			3	2	120	75	96	90	84	48	5/144
1 1/4			3	2	120	60	96	90	64	72	3/16
1 3/8			3	2	96	64	96	120	80	48	7/144
2			1	2	120	80	96	90	84	48	1/16
2 1/2			1	2	120	75	96	90	84	48	5/144
2 3/4			3	2	96	132	96	138	80	48	11/144
3			2	2	120	80	96	90	84	48	1/12
3 1/4			3	2	80	130	96	120	84	48	13/144
3 1/2			1	2	96	84	96	120	80	48	7/144
3 3/4			2	2	120	75	96	90	84	48	5/144
4			3	1	120	60	96	90	84	48	1/8
4 1/2			2	2	120	80	96	90	64	72	3/16
5			3	1	120	75	96	90	84	48	5/144
5 1/4			2	2	96	84	96	120	80	48	7/144
5 1/2			1	2	96	132	96	138	80	48	11/144
6			2	2	120	80	96	90	64	96	1/8
6 1/2			1	2	80	130	96	120	84	48	13/144
7			3	2							
8			3	2							
9			3	2							
10			3	2							
11			3	2							
11 1/2			3	2							
12			3	2							
12 1/2			3	2							
13			3	2							
14			1	2							
15			2	1	120	75	96	90	84	48	5/144
16			1	2							
17			2	1	60	102	56	120	84	70	17/144
18			1	2							
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21			2	2							
22			1	2							
23			1	2							
24			1	2							
25			1	2							
26			1	2							
27			2	2							
28			3	1							
29			3	1	72	116	64	120	60	72	29/144
30			2	2							
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33			2	2							
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36			2	2							
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39			2	2							
40			3	1							
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42			1	2	32	120	60	120	64	84	7/24
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64			1	1							
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67			1	2	32	134	48	120	64	96	67/144
68			1	1	32	102	60	120	64	80	17/48
69			1	2	32	138	48	120	64	96	23/48
70			3	1	32	120	60	120	64	70	35/144
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76			1	1	32	114	48	120	60	72	19/48
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132			2	1							
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135			2	1	48	90	48	120	84	72	45/144
136			1	1	32	102	60	120	64	80	17/24
138			2	1							
140			1	1	32	120	60	120	64	70	35/144
141			2	1	48	94	48	120	84	72	47/144
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147			2	1	48	98	48	120	84	72	49/144
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162			1	1	32	81	48	138	64	96	27/48
164			1	1	32	120	60	120	64	82	41/144
165			1	1	32	83	48	138	64	96	83/144
168			1	1	32	120	60	120	64	84	7/24
170			1	1	32	85	48	138	64	96	85/144
172			1	1	32	120	60	120	64	86	43/144
174			1	1	32	87	48	138	60	96	29/48
176			1	1	32	88	48	138	64	96	11/24
178			1	1	32	89	48	138	64	96	89/144
180			1	1	32	90	48	138	60	96	5/12
182			1	1	32	91	48	138	64	96	91/144
189			2	1	32	90	60	120	64	84	63/144
190			1	1	32	95	48	138	64	96	95/144
192			2	1	32	96	60	120	64	80	4
194			1	1	32	97	48	138	64	96	97/144
200			1	1	32	100	48	138	60	96	25/48
202			1	1	32	101	48	138	64	96	101/144
204			2	1	32	102	60	120	64	80	17/24
210			2	1	32	120	60	120	64	70	35/144
212			2	1	32	106	60	120	64	80	53/144
213			2	1	32	71	48	138	64	96	71/144
216			2	1	32	108	60	120	64	80	3/8
219			2	1	32	73	48	138	64	96	73/144
220			2	1	32	110	60	120	64	80	55/144
222			2	1	32	120	60	120	64	74	37/144
224			2	1	32	112	48	138	64	96	7
225			2	1	32	75	48	138	64	96	25/48
226			2	1	32	114	60	120	64	80	19/24
230			1	1	32	114	48	138	64	96	115/144
231			2	1	32	77	48	138	64	96	77/144
232			1	1	32	116	48	138	64	96	29/48
234			2	1	32	78	48	138	64	96	39/48
237			2	1	32	79	48	138	64	96	79/144
240			1	1	32	120	48	120	64	96	5/8
243			2	1	32	81	48	138	64	96	27/48
244			1	1	32	122	48	120	64	96	61/144
246			2	1	32	120	60	120	64	82	41/144
249			2	1	32	83	48	138	64	96	83/144
250			2	1	32	125	48	138	64	96	125/144
252			2	1	32	120	60	120	64	84	7/24
255			2	1	32	85	48	138	64	96	85/144
258			2	1	32	120	60	120	64	86	43/144
260			1	1	32	130	48	120	64	96	65/144
261			2	1	32	87	48	138	60	96	29/48
264			1	1	32	132	48	120	64	96	11/24
267			2	1	32	89	48	138	64	96	89/144
268			1	1	32	134	48	120	64	96	67/144
270			2	1	32	90	48	138	60	96	5/12
273			2	1	32	91	48	138	64	96	91/144
276			1	1	32	138	48	120	84	96	23/48
279			2	1	32	93	48	138	64	96	93/144
285			2	1	32	95	48	138	64	96	95/144
291			2	1	32	97	48	138	64	96	97/144
300			2	1	32	100	48	138	64	96	25/72
303			2	1	32	101	48	138	64	96	101/144
315			2	1	32	105	48	138	64	96	35/48
318			2	1	32	106	48	138	64	96	53/144
330			2	1	32	110	48	138	64	96	55/144
336			2	1	32	112	48	138	64	96	7
345			2	1	32	115	48	138	64	96	115/144
348			2	1	32	116	48	138	64	96	29/72
360			2	1	32	120	48	120	64	96	15/72
368			2	1	32	122	48	120	64	96	61/144
375			2	1	32	125	48	120	64	96	125/144
390			2	1	32	130	48	120	64	96	65/144
398			2	1	32	132	48	120	64	96	33/72
402			2	1	32	134	48	120	64	96	67/144
414			2	1	32	138	48	120	64	96	23/48

TO SET UP FOR CUTTING SPECIAL THREADS (NOT LISTED ON DIAL SELECTOR)

(1) SET COMPOUND LEVERS A AND B.
(2) PULL OUT AND TURN TUMBLER PIVOTING KNOB TO OUT POSITION.
(3) SET UP GEARS PER GEAR TABLE AND FORMULA ABOVE.
(4) OPERATE AT BACK GEARED SPEEDS ONLY.

1020 LATHE GEAR TABLE

RIVETT LATHE & GRINDER INC.
BOSTON, MASS.
Drawn by [illegible] Date 8-17-41
Traced by [illegible] Date 8-21-41
Checked by [illegible]

GT-94

FILE E-2177

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