



ATLAS PRESS COMPANY  
KALAMAZOO, MICHIGAN 49001

NO. 6818  
**METRIC THREAD  
CUTTING GEARS**  
FOR  
**ATLAS**  
**QUICK CHANGE LATHES**  
APRIL, 1973 FILE NO. 6818-1

1.1  
2  
3  
4.1

Thousands of odd threads, metric threads as well as feeds for coil and wire winding, can be obtained using standard change gears on the Quick-Change quadrant in place of the sliding gear and the two 48 tooth gears. Gear set-ups for metric threads, and odd threads from 1 to 70, are shown in charts Fig. 7 and Fig. 8.

Information for setting up the gear train for wire winding or threads and feeds not listed can be obtained on request. When writing specify thread or feed required - for coil winding feeds, give name, type and size of wire.

**SETTING UP GEAR TRAIN**

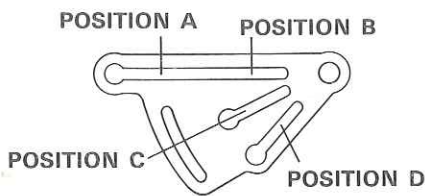


Fig. 1. Gear Positions on Quadrant

Gear train set-ups using standard change gears have been simplified by assigning gear positions A, B, C and D to the quadrant as shown in Figure 1. These positions are indicated in the odd thread and metric tables (Fig. 7 and Fig. 8).

The outer portion of the longest slot is position A—the inner portion of the same slot is position B. The short middle slot is position C—the lower slot, position D. These positions are approximate—they will vary with the size of the gears composing the train.

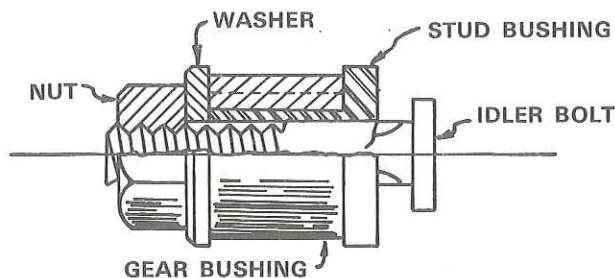


Fig. 2. Cross section of change gear stud assembly.

Before setting up a train of change gears, examine one of the change gear stud assemblies which hold gears to gear quadrant (Fig. 2). Each stud assembly has an outer gear bushing long enough to accommodate two gears. This bushing has a double key which fits into the keyways in the gears. Gear bushing and gears fit over a stud bushing, this assembly is bolted to the gear quadrant. The washer is a bearing for the outer end of the gear bushing.

**NOTE:** Lubricate gear bushing before assembling on idler bolt.

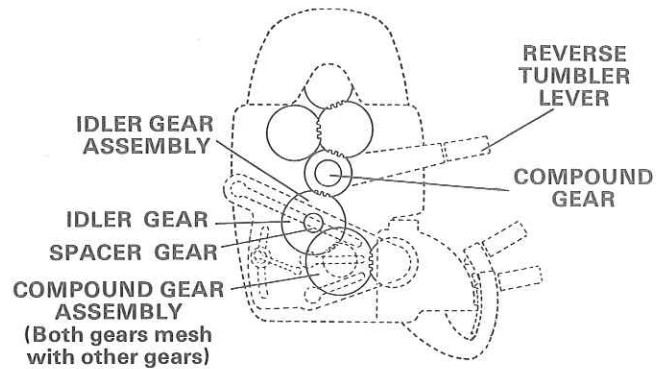


Fig. 3. Diagram showing compound and idler gears in a gear train

Notice that in order to make this assembly complete, two gears must be mounted on the gear bushing at one time. When both of the gears on a gear bushing mesh with other gears in the train, they form a "Compound" gear assembly (Fig. 3).

When only one of the two gears meshes with another gear in the train, this gear is called an "Idler." The other gear, or spacer, is called a "Spacer" gear and does not mesh with any gear in the train.

The positions of the gears on the stud assemblies are denoted as "N" and "F" in the gear set-up tables. "N" position means the gear or spacer is positioned on stud NEXT TO quadrant—"F" position is gear or spacer AWAY from quadrant. "SS" denotes that a double-keyway steel spacer (No. 9-113A) must be used on gear stud.

**GEAR CLEARANCE**

When setting up the gear train, be sure to allow sufficient clearance between two meshing gears (Fig. 4). Gear clearance does not reduce the accuracy of a thread cutting operation, because all play in the gears is taken up in one direction. A method often used to obtain proper gear clearance is: (1) Place a sheet of thick writing paper (approximately .004" thick) between the teeth of the two meshing gears, (2) tighten gears in position, and (3) remove paper.

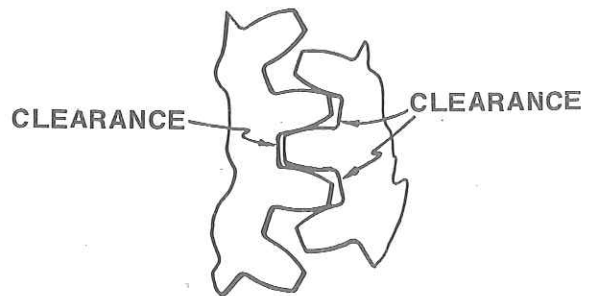


FIG. 5—PROPER GEAR CLEARANCE

Select gears as indicated on chart for thread or feed desired. Place gears on quadrant as directed—mesh gear train with compound gear indicated. Set Right Hand and Left Hand quick change gear box levers in position shown.

**NOTE:** Special gear trains are for a specific thread or feed only. To obtain threads or feeds shown on the Quick change gear box chart you must re-install the standard gear train on the quadrant.

**CAUTION:** Before attempting to cut metric threads refer to "CUTTING METRIC THREADS" in the threading section of your "Manual of Lathe Operation."

**IMPORTANT**

Figure 8 shows gear train set-ups for threads as coarse as 1-1/4 per inch. However, extreme care must be taken when cutting threads less than 4 per inch. USE SLOW SPEEDS AND TAKE EXTREMELY LIGHT CUTS — the lead screw is revolving very rapidly, making it difficult for the operator to engage the carriage half-nuts at the right moment. Also excessive pressure is being exerted on the lead screw, resulting in rapid wear and overloading of the gear train.

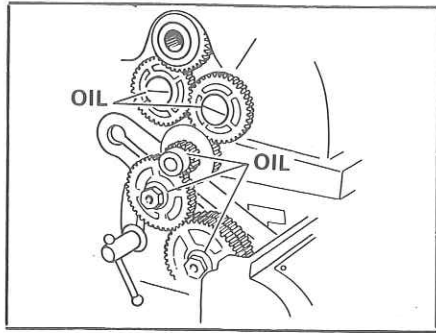


Fig. 5.

**LUBRICATION**

After setting up gear train lubricate gear studs at locations shown with SAE20 oil (See Fig. 5). Lubricate gear teeth with Keystone #122 or equivalent outer gear lubricant.

**SUGGESTIONS FOR OPERATION**

1. CAUTION—do not shift the reverse tumbler lever or Quick Change gear levers when lathe is turning at high speeds or under heavy loads.
2. Do not shift sliding gear when gear train is turning.
3. If Quick-Change levers do not index, do not force, check lubrication and rotate spindle by hand until levers slide easily into position.
4. Keep metal chips from piling up underneath gear box—they may cause serious damage to the gear train.

**REPLACING THE STANDARD QUICK-CHANGE GEAR TRAIN**

After making special set-ups for wire winding, odd or metric threads, be sure to assemble the sliding gear and the double 48 tooth gears in their original positions on the quadrant as shown in Fig. 6.

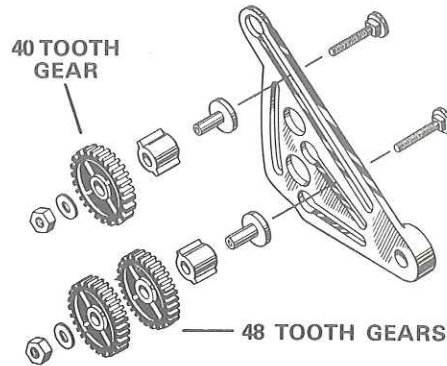
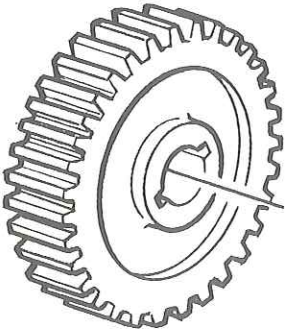


Fig. 6. Exploded view of Gears and Studs which make up the standard Quick-Change Gear Train

*6818 metric gear set  
includes items listed below*



**CHANGE GEARS**

- |                         |                                |
|-------------------------|--------------------------------|
| 20 Tooth Gear 9-101-20A | 50 Tooth Change Gear 9-101-50A |
| 24 Tooth Gear 9-101-24A | 52 Tooth Change Gear 9-101-52A |
| 32 Tooth Gear 9-101-32A | 54 Tooth Change Gear 9-101-54A |
| 36 Tooth Gear 9-101-36A | 56 Tooth Change Gear 9-101-56A |
| 44 Tooth Gear 9-101-44A | 60 Tooth Change Gear 9-101-60A |
| 46 Tooth Gear 9-101-46A | 64 Tooth Change Gear 9-101-64A |

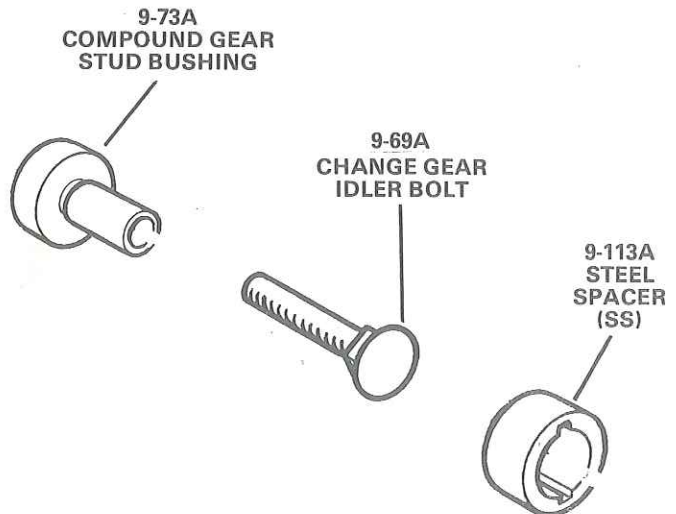
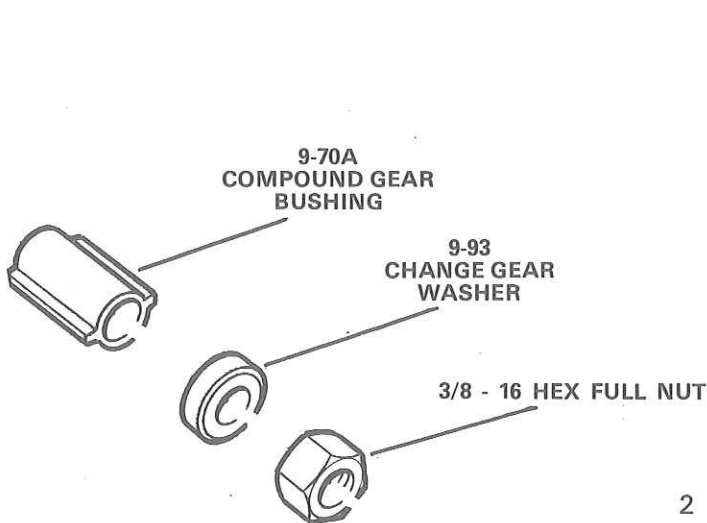


FIGURE 7

GEAR SET-UPS FOR METRIC THREADS

SS in table below denotes steel spacer. Extra gears, stud assemblies, and spacers necessary to make up the gear train are available from factory at nominal cost.

Pitch in Millimeters	English Equivalent	Position A		Position B		Position C		Position D		Compound Gear	Left Hand Lever Position	Right Hand Lever Position
		N	F	N	F	N	F	N	F			
.25	.00984	SS	48	32*	SS	-	-	52	60	16	D	4
.3	.01181	48	SS	46	50	-	-	SS	24*	32	E	5
.35	.01378	48	SS	40	44	-	-	SS	24*	32	E	3
.4	.01575	SS	48	40*	SS	-	-	40	52	16	C	4
.45	.01772	56	SS	SS	24*	-	-	44	50	32	E	1
.5	.01968	SS	48	32*	SS	-	-	52	60	16	C	4
.55	.02165	48	SS	-	-	40	52*	-	-	32	D	9
.6	.02362	48	SS	46	50	-	-	SS	24*	32	D	5
.65	.02559	SS	48	36	44	-	-	32*	SS	16	C	1
.7	.02756	48	SS	40	44	-	-	SS	24*	32	D	3
.75	.02952	48	SS	-	-	40	52*	-	-	32	D	4
.8	.03150	SS	<del>48</del>	40*	SS	-	-	36	52	16	B	4
.85	.03346	SS	48	24*	SS	-	-	60	64	16	B	8
.9	.03543	SS	64	32*	SS	-	-	44	54	16	B	5
.95	.03740	SS	64	32*	SS	-	-	46	56	16	B	4
1.00	.03937	SS	48	32*	SS	-	-	52	60	16	B	4
1.25	.04921	SS	48	32	50	-	-	40*	SS	16	A	7
1.50	.05906	48	SS	-	-	40	52*	-	-	32	C	4
1.75	.06889	SS	60	24*	SS	-	-	54	56	16	A	8
2.00	.07874	48	SS	-	-	44	52*	-	-	32	B	9
2.50	.09842	50	32	SS	48	-	-	-	-	32	A	4
3.	.11811	48	SS	-	-	40	52*	-	-	32	B	4
3.50	.13780	56	54	-	-	SS	48*	-	-	32	A	8
4.	.15750	48	SS	-	-	44	52*	-	-	32	A	9
4.50	.17720	48	SS	36	46	-	-	SS	24*	32	A	8
5.	.19635	48	SS	-	-	50	64*	-	-	32	A	7
5.5	.21650	48	SS	-	-	40	52*	-	-	32	A	6
6.	.23620	48	SS	-	-	40	52*	-	-	32	A	4
7.	.27560	48	SS	40	44	-	-	SS	24*	32	A	1

\*This gear to mesh with gear in gear box.

FIGURE 8

GEAR SET-UPS FOR FREQUENTLY USED ODD  
THREADS NOT SHOWN ON QUICK-CHANGE CHART

SS in table below denotes steel spacer. Extra gears, stud assemblies, and spacers necessary to make up the gear train are available from factory at nominal cost.

Threads per Inch	Feed in Inches	Position A		Position B		Position C		Position D		Compound Gear	Left Hand Lever Position	Right Hand Lever Position
		N	F	N	F	N	F	N	F			
1¼	.80000	-	-	64	SS	-	-	20	64*	32	A	1
1⅓	.75000	-	-	64	SS	-	-	20	60*	32	A	1
1½	.66666	-	-	64	SS	-	-	24	64*	32	A	1
2	.50000	48	SS	-	-	24	48*	-	-	32	A	1
2½	.40000	48	SS	-	-	24	48*	-	-	32	A	3
2⅝	.38094	-	-	64	SS	-	-	24	64*	32	A	8
2¾	.36362	48	SS	-	-	24	48*	-	-	32	A	4
2⅞	.34782	48	SS	-	-	24	48*	-	-	32	A	5
3	.33332	48	SS	-	-	24	48*	-	-	32	A	6
3¼	.30770	48	SS	-	-	24	48*	-	-	32	A	7
3½	.28570	48	SS	-	-	24	48*	-	-	32	A	8
21	.04761	24	56	-	-	-	-	64*	SS	16	A	2
25	.04000	20	50	-	-	-	-	64*	SS	16	A	3
27	.03703	20	54	-	-	64*	SS	-	-	16	A	3
33	.03030	SS	48	32	44	-	-	40*	SS	16	B	6
35	.02857	24	56	-	-	-	-	64*	SS	16	A	9
39	.02564	24	52	-	-	-	-	64*	SS	16	B	2
42	.02380	32	56	48	SS	-	-	-	-	16	B	6
45	.02222	24	54	-	-	-	-	64*	SS	16	B	3
49	.02040	32	56	48*	SS	-	-	-	-	16	B	8
50	.02000	36	60	48*	SS	-	-	-	-	16	B	9
54	.01851	32	54	48*	SS	-	-	-	-	16	C	1
55	.01818	24	44	-	-	-	-	64*	SS	16	B	9
62	.01613	SS	64	32*	SS	-	-	44	54	16	C	7
63	.01587	24	54	-	-	-	-	48*	SS	16	B	8
65	.01538	SS	48	32	52	-	-	64*	SS	16	C	3
66	.01515	SS	48	24	44	-	-	48*	SS	16	C	2
69	.01449	24	46	48*	SS	-	-	-	-	16	C	2
70	.01428	24	56	-	-	-	-	64*	SS	16	B	9

\*This gear to mesh with gear in gear box.