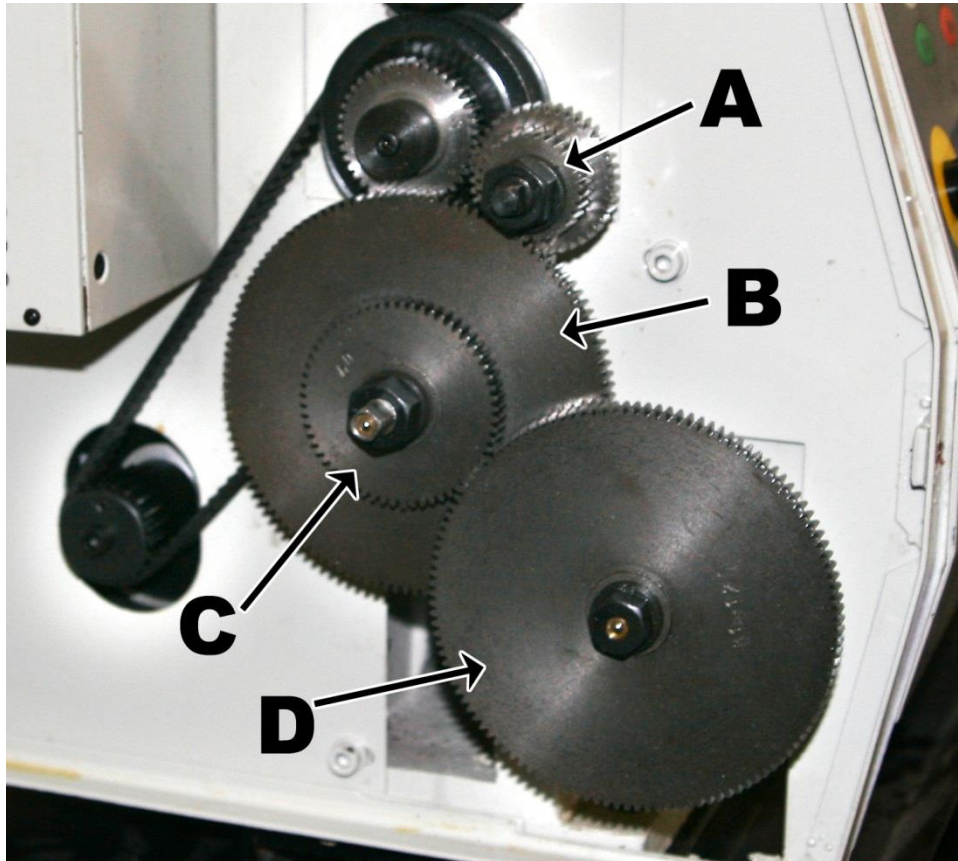


## Threading with the HiTorque 8½"×16" and 8½"×20" Bench Lathe



There are 4 positions for the change gears, commonly called A, B, C, and D.

<b>A</b>	This is the top change gear position. It is forward of, and slightly below the spindle.
<b>B</b>	Gear positions B and C are on the same shaft, between positions A and D. Position B is the inside gear on this shaft.
<b>C</b>	Gear positions B and C are on the same shaft; between positions A and D. Position C is the outside gear on this shaft.
<b>D</b>	Position D is the end of the lead screw.

The change gears are commonly tight on the shaft when new. You might need to use a screwdriver behind them to pry them off.

To change a gear in position A, use an 8 mm end wrench on the square end of the shaft to keep it from turning. Loosen the nut with a 19 mm end wrench and remove the notched washer from behind the nut. Remove the nut so you can slide the gear off the shaft.



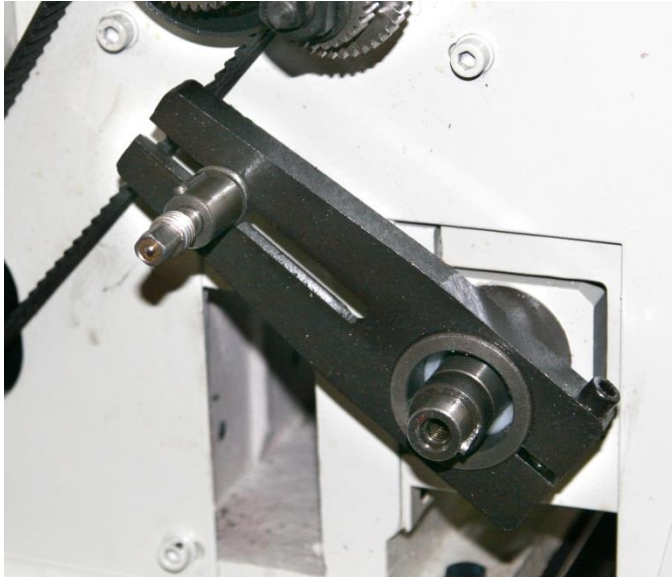
To change a gear in positions B or C, use an 8 mm end wrench on the square end of the shaft to keep it from turning. Loosen the nut with a 19 mm end wrench and remove the notched washer from behind the nut. Remove the nut so you can slide the gear off the shaft.

The B and C gears ride on a sleeve that is free to turn on the shaft. It has a keyway and key that keep the B and C gears turning together. Lubricate this sleeve every time you change a B or C gear. Bad things happen when these sleeves seize on the shaft.

To change the gear in position D, use a 17 mm end wrench to remove the shoulder bolt that retains the gear. Gear position D has a spacer behind the gear. When you only use three gears, put the spacer outside the gear so the gear will align with the gear in position B.

In the change gear results, many of the combinations have “Any gear” in columns B and C. This means that you can use a gear with any number of teeth in position B. It is an idler and does not affect the overall gear ratio. Use a gear that makes it easy to properly engage the gears. For these combinations, you can use any gear for position C; this gear acts only as a spacer and does not engage the other gears.

The B-C Gear shaft is mounted on an arm that pivots around the lead screw. You can move the B-C shaft location to engage different gear combinations. To engage a new set of gears, use a 5 mm hex wrench to loosen the socket head cap screw that locks the B-C arm around the lead screw. Use an 8 mm end wrench on the square end of the B-C shaft to loosen it in the slot in the arm. Move the gears so they are all in engagement. Tighten the arm around the lead screw and tighten the B-C shaft.



## Change Gear Tables

### Inch Threads

TPI	A	B	C	D
6	50	100	127	30
7	50	100	127	35
8	50	100	127	40
9	50	100	127	45
10	50	100	127	50
11	50	100	127	55
12	50	100	127	60
13	55	94	100	60
14	30	120	127	35
16	30	120	127	40
18	30	120	127	45
20	30	120	127	50
24	30	120	127	60
27	50	85	80	100
28	49	94	87	100
32	56	100	85	120
36	45	100	94	120
40	49	90	70	120
44	49	85	60	120
48	49	85	55	120
56	49	90	50	120
64	40	94	56	120
72	40	94	50	120
80	35	100	55	120

### Metric Threads

Pitch	A	B	C	D
0.25	30	120	60	120
0.3	30	100	60	120
0.35	35	100	60	120
0.4	40	100	60	120
0.45	45	100	60	120
0.5	30	80	Any	120
0.6	30	100	Any	100
0.7	50	100	70	100
0.75	45	80	Any	120
0.8	50	100	80	100
1	50	80	Any	100
1.25	50	100	Any	80
1.5	45	100	Any	60
1.75	49	120	Any	56
2	50	120	Any	50
2.5	50	120	Any	40
3	50	100	120	40
3.5	55	100	127	40
4	55	100	127	35