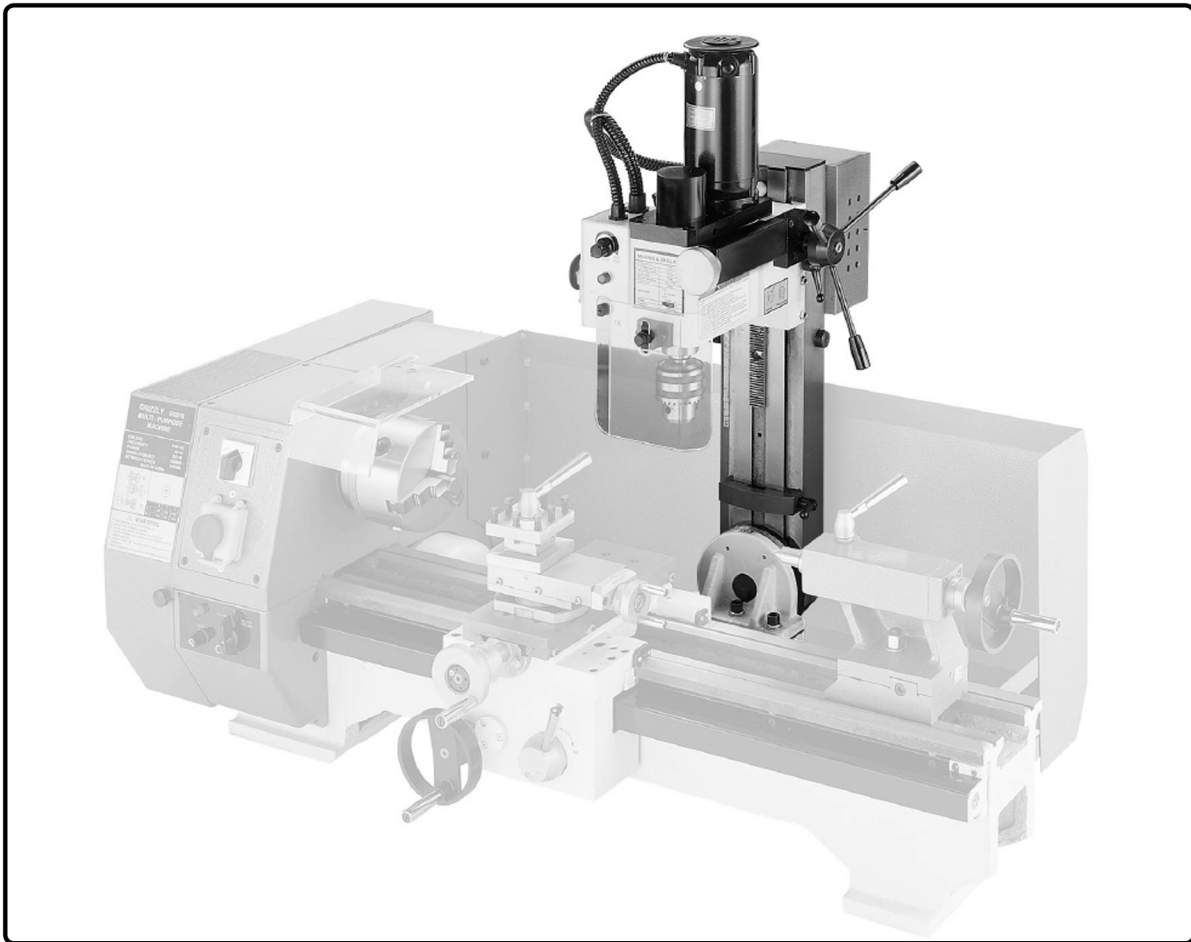




MODEL CX705 MILL / DRILL HEAD

USER MANUAL (1 of 2)



Safety Instructions For Mill/Drill Head

1. **MAKE SURE ALL GUARDS** are in place and that the Mill/Drill head was assembled properly.
2. **BEFORE STARTING THE MACHINE** be certain the workpiece has been properly engaged in the chuck, and that there is adequate clearance for full motion.
3. **SELECT THE TURNING SPEED** which is appropriate for the type of work, material, and tool bit. Allow the machine to gain its full speed before beginning a cut.
4. **DO NOT STOP MACHINE USING YOUR HAND** against the workpiece or chuck.
5. **DO NOT LEAVE MACHINE RUNNING UNATTENDED** for any reason.
6. **NEVER LEAVE A CHUCK KEY IN THE MACHINE CHUCK.**
7. **NEVER OPERATE THE MACHINE WITH DAMAGED OR WORN PARTS.** Maintain your machine in proper working condition. Perform routine inspections and maintenance promptly when called for. Put away adjustment tools after use.
8. **MAKE SURE MACHINE IS TURNED OFF**, disconnected from its power source and all moving parts have come to a complete stop before starting any inspection, adjustment, or maintenance procedure.
9. **KEEP LOOSE CLOTHING ARTICLES** such as sleeves, belts or jewelry items away from the drill spindles.
10. **ALWAYS USE THE PROPER CUTTING TOOLS** for the material you are turning, make certain they are sharp and that they are held firmly in the chuck.
11. **ALWAYS PLACE A BOARD OR PIECE OF PLYWOOD ACROSS THE BEDWAY** when removing or installing chucks to avoid the possibility of a finger pinch occurring between a loose chuck and the edges of the bedway.

CAUTION

No list of safety guidelines can be complete. Every shop environment is different. Always consider safety first, as it applies to your individual working conditions. Use this and other machinery with caution and respect. Failure to do so could result in serious personal injury, damage to equipment or poor work results.

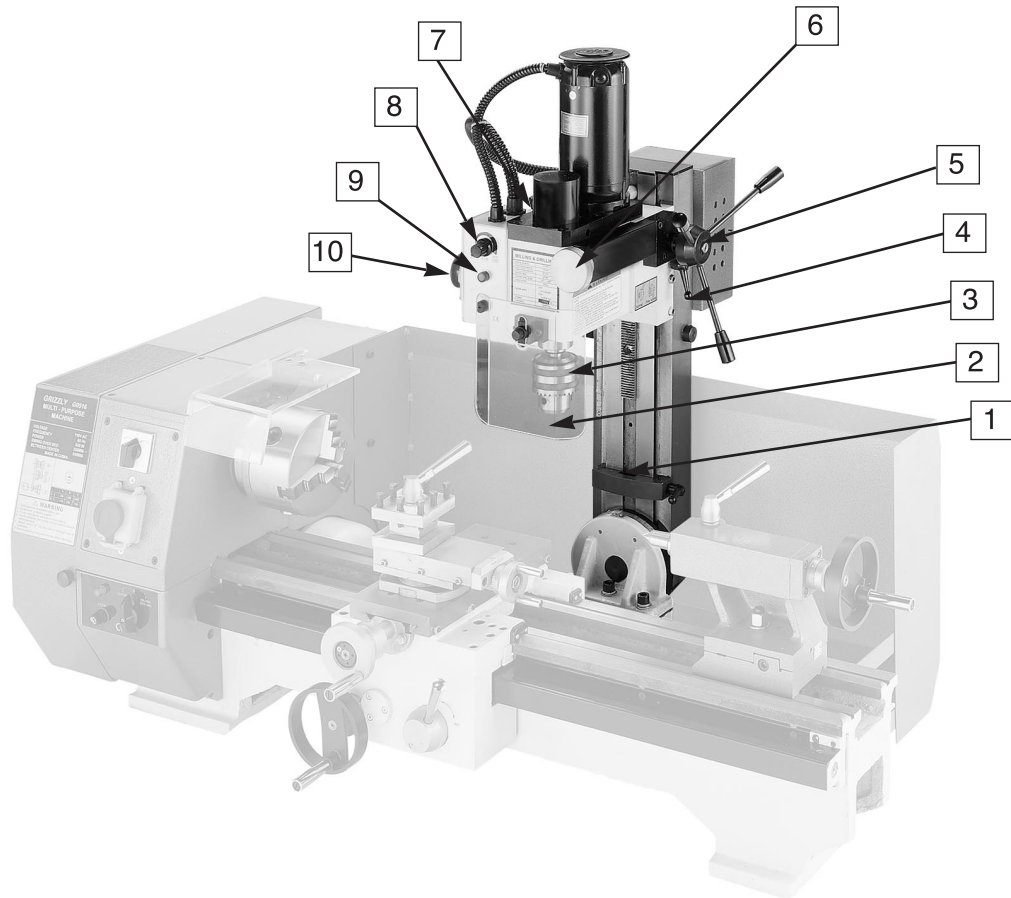
WARNING

Like all power tools, there is danger associated with the Machine. Accidents are frequently caused by lack of familiarity or failure to pay attention. Use this tool with respect and caution to lessen the possibility of operator injury. If normal safety precautions are overlooked or ignored, serious personal injury may occur.

GROUNDING

In the event of an electrical short, grounding reduces the risk of electric shock by providing a path of least resistance to disperse electric current. The outlet must be properly installed and grounded in accordance with all local codes and ordinances.

IDENTIFICATION

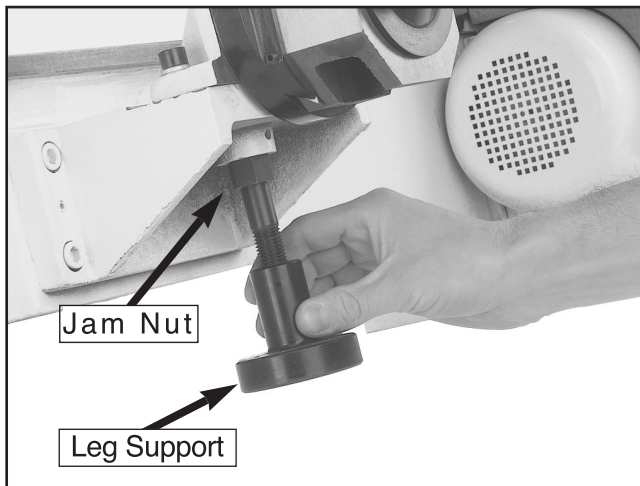


- | | |
|--------------------------------------|--|
| 1. Mill Depth Stop | 6. Mill/Drill Head Fine Downfeed Knob |
| 2. Mill/Drill Eyeshield | 7. Mill/Drill High/Low Speed Selection Lever |
| 3. Drill Chuck | 8. Mill/Drill Variable Speed Adjustment |
| 4. Mill/Drill Elevation Lock | 9. Mill/Drill Power Indicator Light |
| 5. Mill/Drill Coarse Downfeed Handle | 10. Mill/Drill ON/OFF, Emergency Stop Switch |

Install Support Leg

To install the support leg:

1. Get the help of an assistant.
2. Tip the lathe forward and have your assistant thread the leg w/attached foot into the lathe stand as shown in Figure below.



Installing support leg.

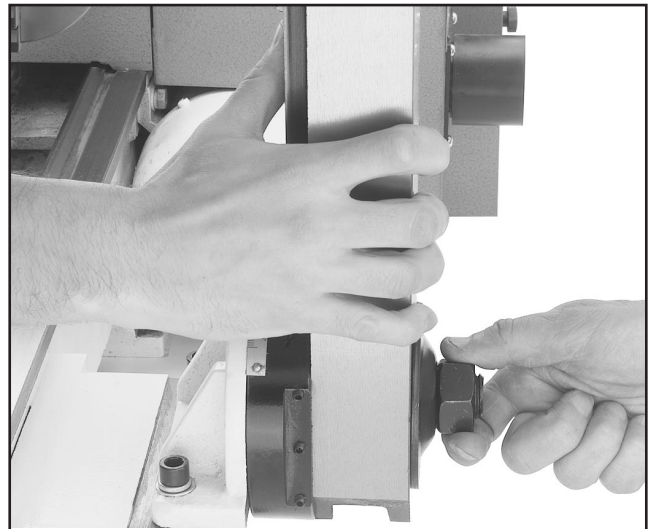
3. Adjust the support leg until it just makes contact with the surface of your workbench or stand.
4. Tighten the jam nut so the leg will not move.

Attach Mill/Drill to Lathe

To attach the mill/drill head to the lathe body:

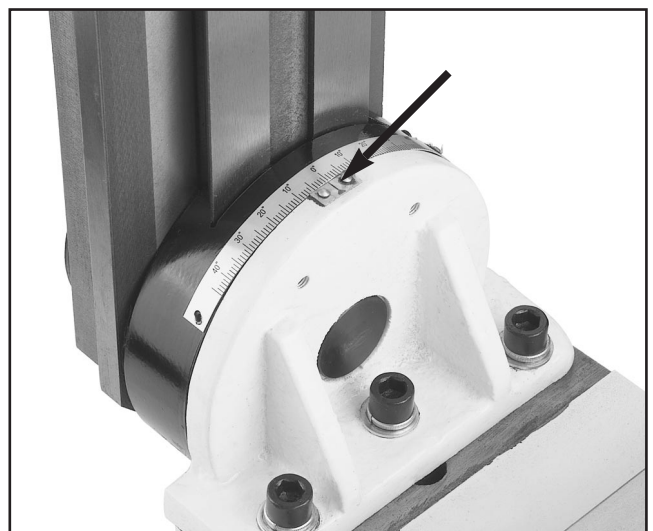
1. Get the help of an assistant.
2. Locate the included nut that fits on the large bolt in the mounting bracket, so you have it ready for the next step.

3. Place the bottom end of the mill/drill head over the mounting bolt and up against the mounting bracket, then have your assistant thread the nut onto the bolt as shown in Figure below, but DO NOT tighten the nut yet.



Threading nut onto bolt with mill/drill head in place against mounting.

4. Align the indicator on the mounting bracket with the "0" line on the mill/drill swivel scale, as shown in Figure below.



Mill/drill swivel scale aligned with hub indicator line in the "0" position.

5. Now, tighten the large nut that attaches the mill/drill head to the lathe hub bracket.

Install Backsplash

To install the backplash:

1. Get the help of an assistant.
2. Hold the backplash against the back of the lathe so all of the mounting holes are aligned, and instruct your assistant to secure the back splash with the (2) M6-1 X 10 cap screws as shown in **Figure 1.** and (2) M8-1.25 X15 hex bolts and washers as shown in **Figure 2.**

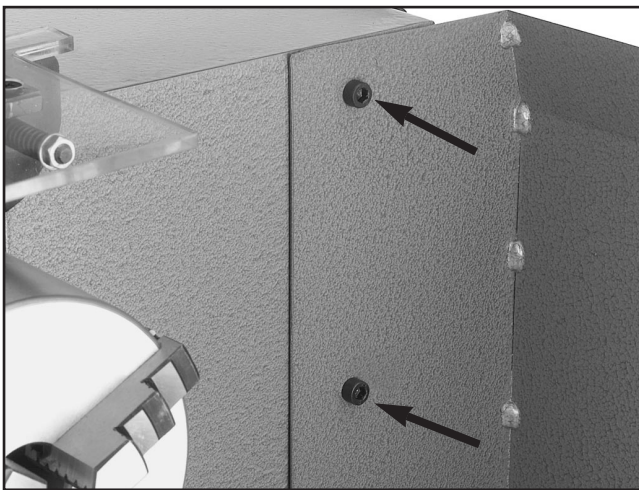


Figure 1. Two cap screws secure the left-hand side of the back splash to the lathe

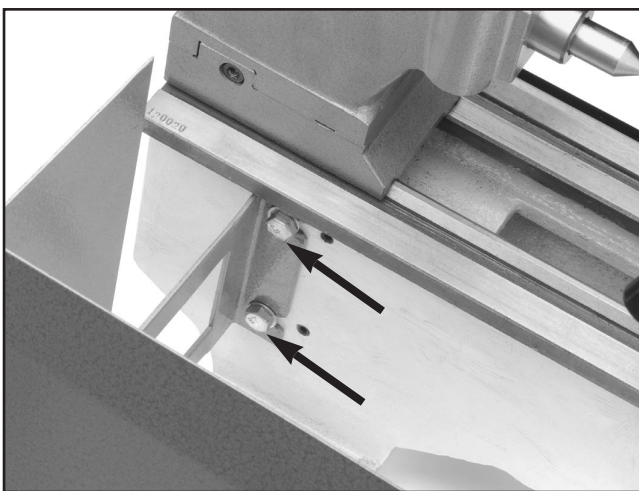


Figure 2. Two hex bolts/washers secure the right-hand side of the backplash to the lathe.

Mount Mill/Drill Eyeshield

To mount the mill/drill eyeshield:

1. Attach the eyeshield to the mill/drill with the knurled knob as shown in **Figure 3.** *Note- the eyeshield provides the best coverage when it is positioned down as it can go.*

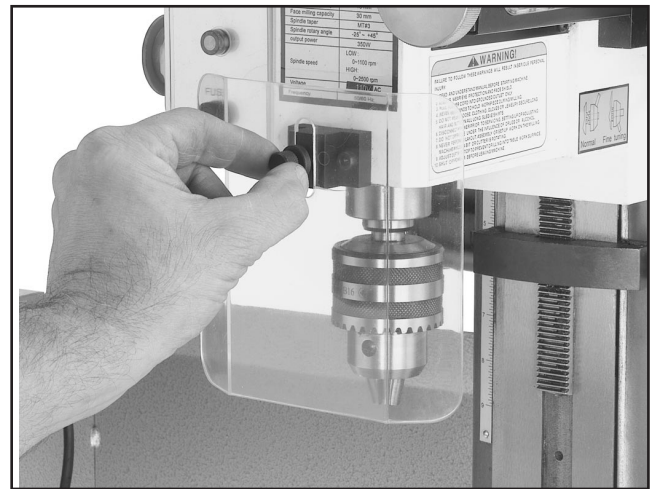


Figure 3. Attaching eyeshield to the mill/drill head.

Test Run Mill/Drill

Before continuing to the Operations section, test run the mill/drill to verify that it runs properly.

To test run the mill/drill:

1. Make sure that the factory installed drill chuck is tight, that there is not a chuck key in the chuck, and that the eyeshield is firmly mounted between you and the drill chuck. *Make this step a habit that you perform every time you start the lathe.*
2. Plug the machine into the power out - let.
3. Familiarize yourself with the mill/drill controls shown in **Figure 4 and 5**.

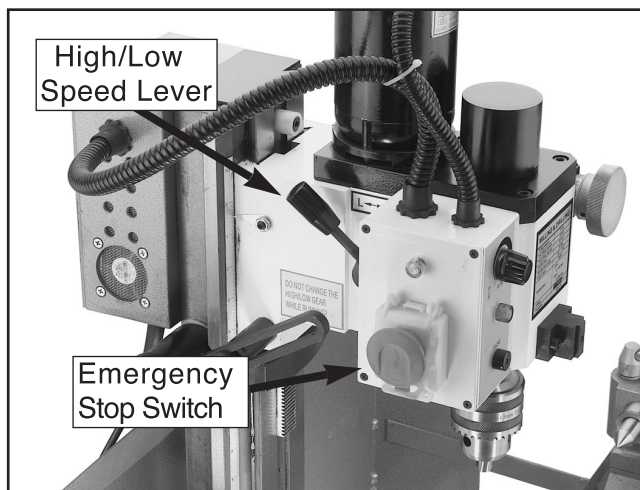


Figure 4. Mill/drill controls.

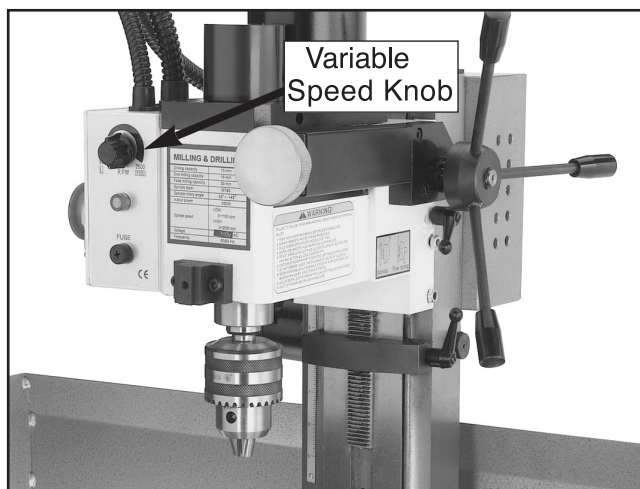


Figure 5. Mill/drill controls.

4. Rotate the Lathe/Mill selector switch to the "MILLING" position.
5. Move the high/low speed lever to the "L" position for low speed.
6. Unlatch mill/drill emergency stop switch cover - this should make the mill/drill power indicator light up.
7. Rotate the variable speed knob clockwise to turn the mill/drill spindle ON. The farther you rotate the variable speed knob, the faster the mill/drill spindle will rotate.
8. Rotate the variable speed dial clockwise as far as it will go, so the drill chuck is spinning at top speed.
9. Rotate the variable speed dial counterclockwise as far as it will go. *This should stop the drill chuck.*
10. Press the mill/drill emergency stop button to turn the mill/drill OFF.
11. Move the high/low speed lever to the "H" position for high speed.
12. Unlatch mill/drill emergency stop switch cover - this should make the mill/drill power indicator light up.
13. Rotate the variable speed knob clockwise to turn the mill/drill spindle ON. The farther you rotate the variable speed knob, the faster the mill/drill spindle will rotate.
14. Rotate the variable speed dial clockwise as far as it will go, so the drill chuck is spinning at top speed.
15. Rotate the variable speed dial counterclockwise as far as it will go. *This should stop the drill chuck.*
16. Press the mill/drill emergency stop button to turn the mill/drill OFF.

MILL/DRILL OPERATIONS

Mill/Drill

To get the most out of your machine, please take the time to familiarize yourself with the various controls and components of the mill/drill, as shown in **Figures 6 and 7**.

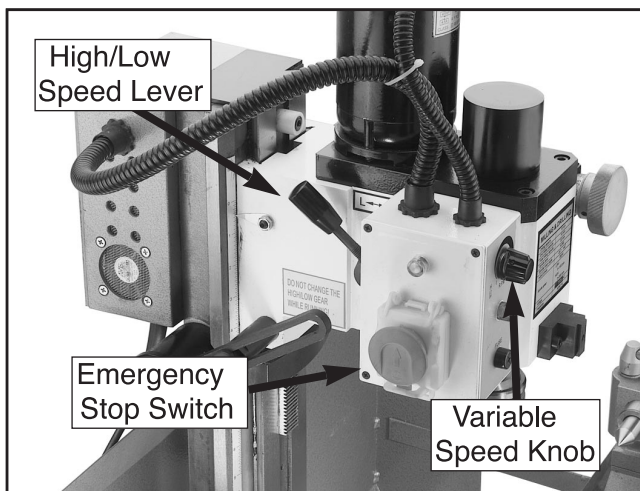


Figure 6. Mill/drill controls.

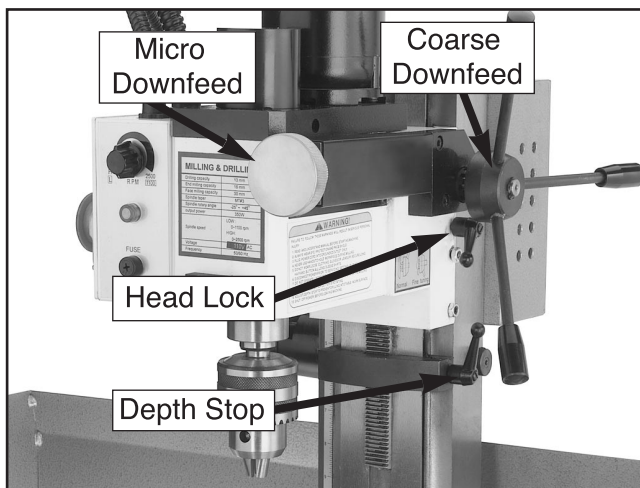


Figure 7. Mill/drill controls.

NOTICE

The hub on the coarse downfeed hand-wheel must be engaged to use the micro downfeed knob.

Changing Chucks

The drill chuck can be removed and replaced with an optional collet chuck when switching to milling operations.

To change chucks in the mill/drill:

1. **Disconnect the lathe/mill from the power source!**
2. Remove the mill/drill spindle cap as shown in **Figure 8**. *Note - if you cannot remove the cap off by pulling on it, give it a sideways bump with your hand.*

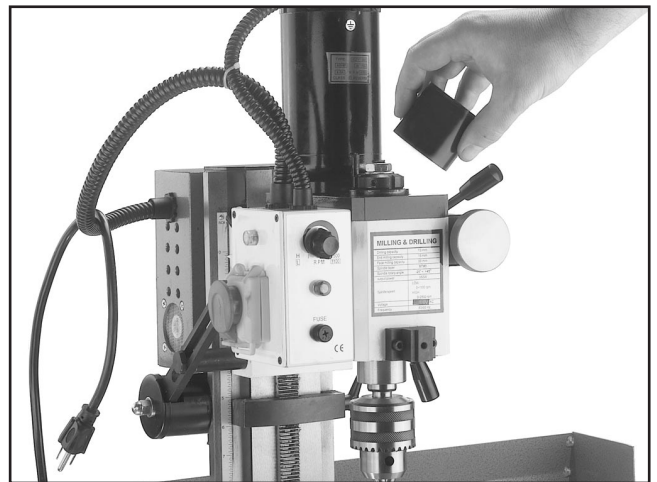


Figure 8. Removing mill/drill spindle cap.

3. Use a 19mm wrench, as shown in **Figure 9**, to remove the spindle draw nut.

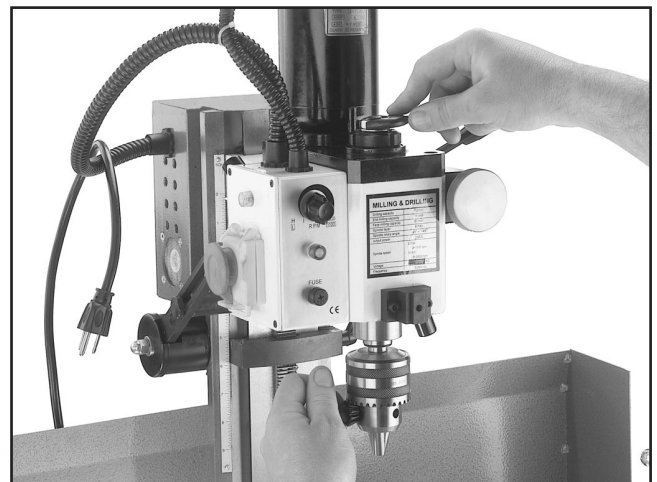


Figure 9. Removing mill/drill spindle lock nut.

4. Thread the draw nut up so it is flush with the top of the draw bolt.
5. Using a brass or wood hammer, tap the end of the draw nut as shown in **Figure 10**. The drill chuck should now become loose in the spindle.

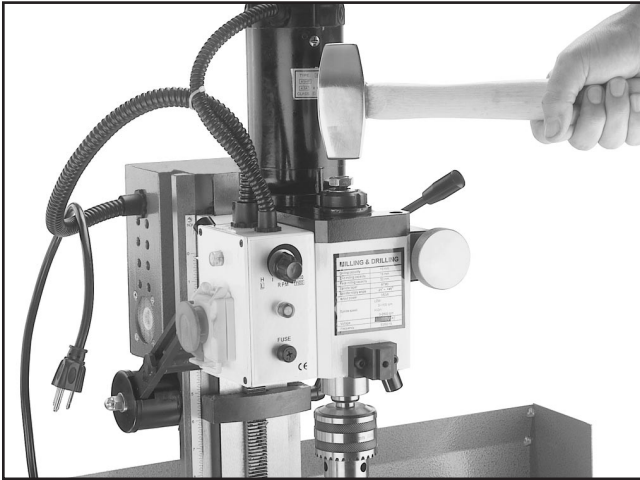


Figure 10. Tapping draw bolt loose with hammer.

6. Hold the drill chuck with one hand and remove the draw nut and washer with the other hand. The drill chuck should now be easily removed from the bottom as shown in **Figure 11**.

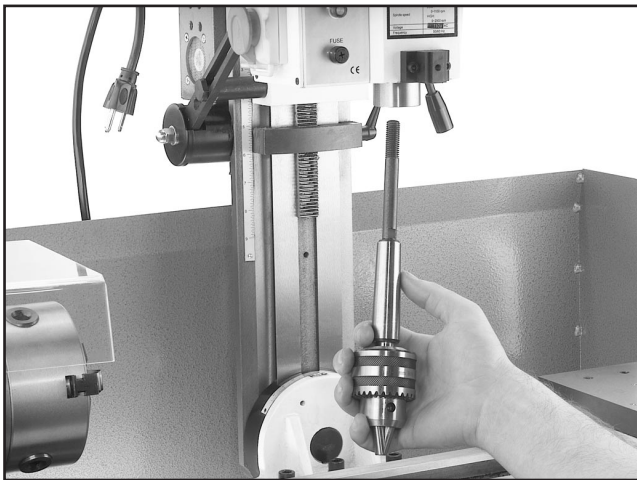


Figure 11. Removing drill chuck from spindle

7. Remove the draw bolt from the drill chuck arbor and thread it into the mill arbor. Note - use the flats on the draw bolt to loosen or tighten it in the arbors.

8. Firmly insert your collet chuck into the spindle taper.
9. Insert the flat washer and thread the hex nut onto the end of the draw bolt.
10. Hold the collet chuck in place with the spanner wrench and tighten the hex nut on the draw bolt just enough to snug it in place. See **Figure 12**. **DONOT** tighten the hex nut too tight or the collet chuck will be hard to remove from the spindle taper.

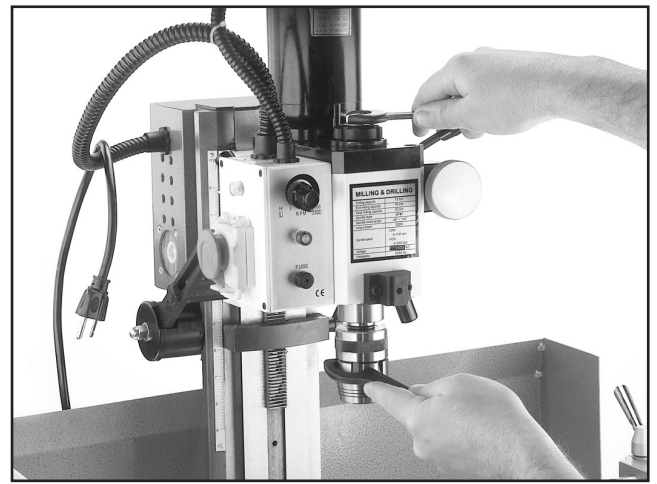


Figure 12. Installing optional collet chuck.

Installing Mill Table

The Mill/Drill head includes a milling table as an accessory. When the Mill/Drill head is shipped from the factory, the compound slide is mounted on the cross slide and must be removed before the milling table can be installed. Once installed, the milling table moves back and forth with the cross slide.

To install the mill table:

1. Use a 12mm wrench to remove the two bolts that secure the compound slide to the cross side. See **Figure 13**.

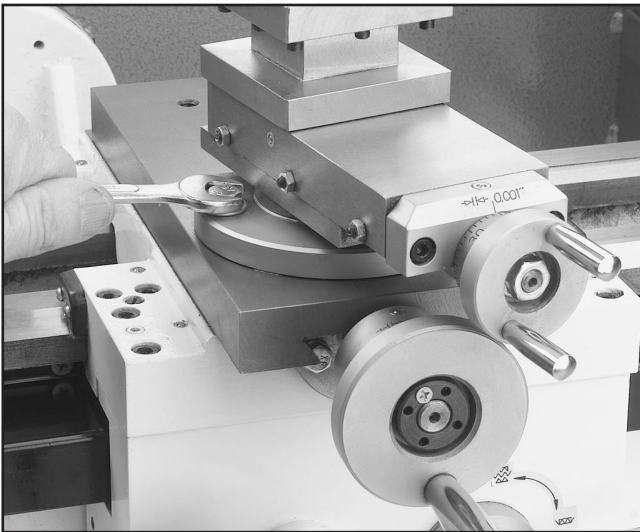


Figure 13. Removing compound slide bolts.

2. Remove the compound slide from the cross slide.
3. Place the milling table on the cross slide so the mounting bolts line up with the threaded holes.

4. Secure the milling table to the cross slide, using a 6mm allen wrench with the table mounting cap screws. **Figure 14** shows the milling table installed on the cross slide.

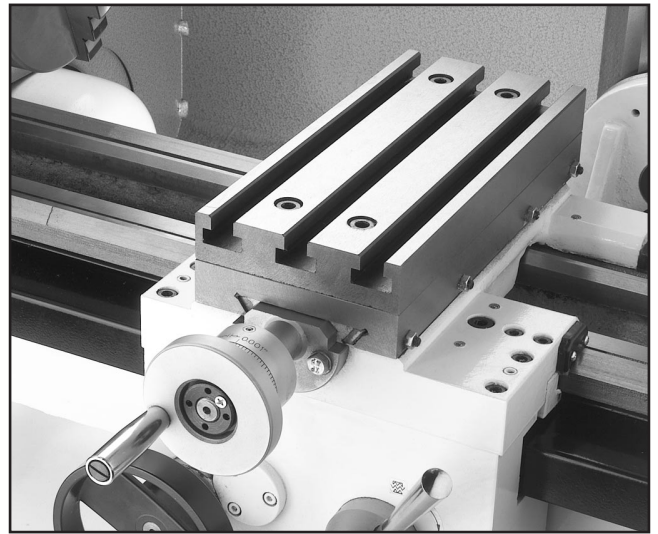
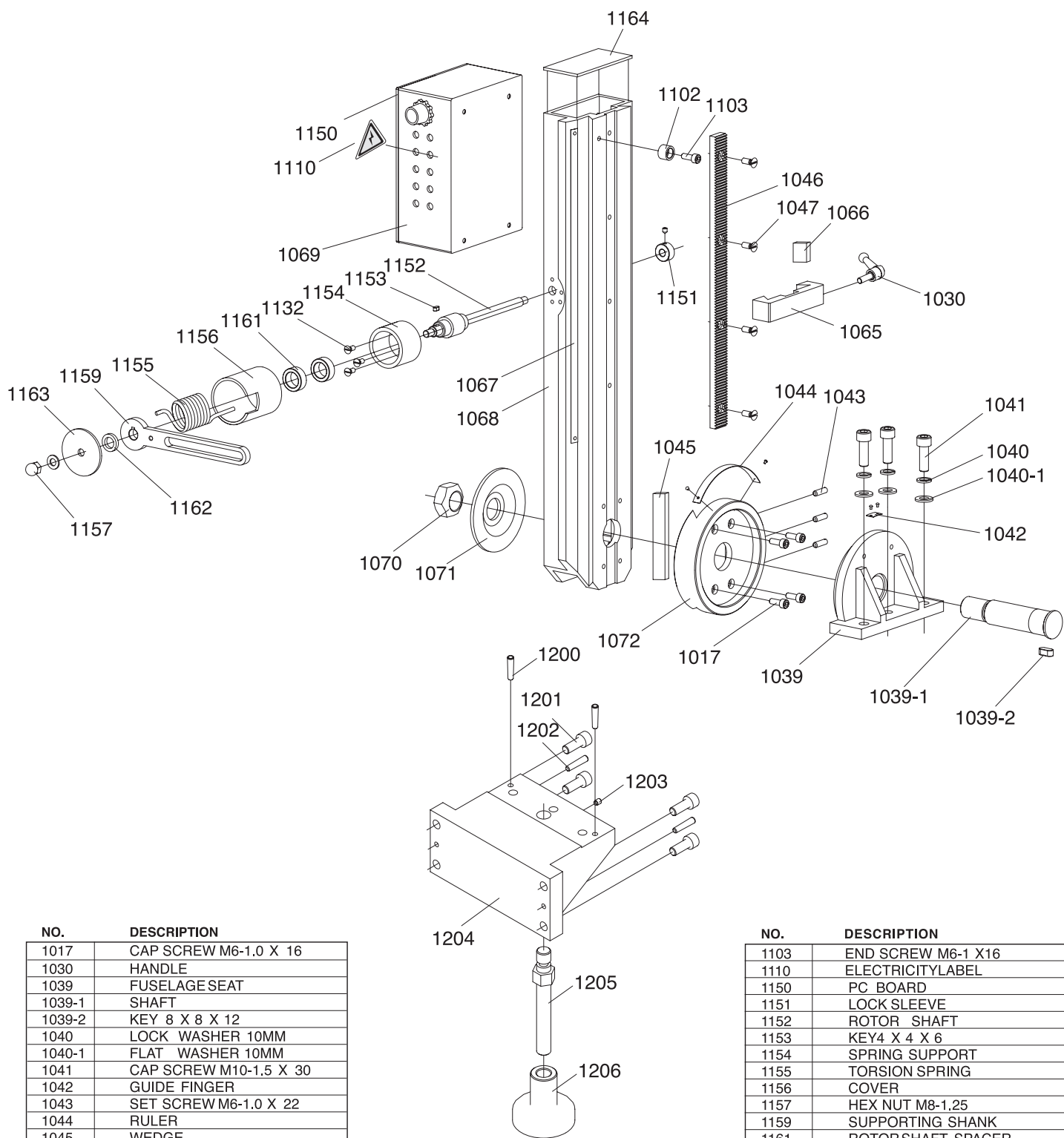


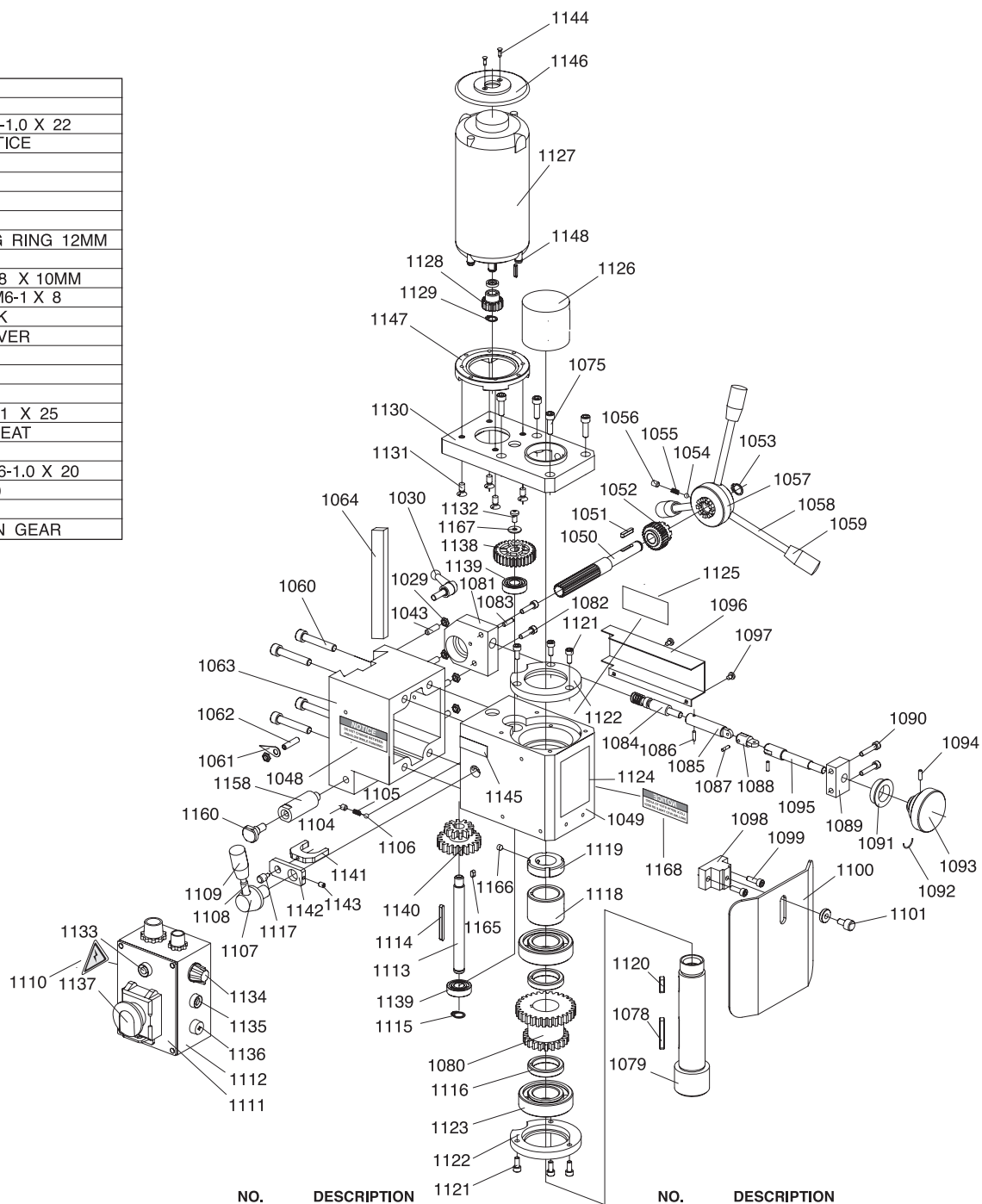
Figure 14. Mill table installed on cross slide.



NO.	DESCRIPTION
1017	CAP SCREW M6-1.0 X 16
1030	HANDLE
1039	FUSELAGE SEAT
1039-1	SHAFT
1039-2	KEY 8 X 8 X 12
1040	LOCK WASHER 10MM
1040-1	FLAT WASHER 10MM
1041	CAP SCREW M10-1.5 X 30
1042	GUIDE FINGER
1043	SET SCREW M6-1.0 X 22
1044	RULER
1045	WEDGE
1046	GEAR RACK
1047	CAP SCREW M6-1 X 12
1065	LIMIT BLOCK
1066	WEDGE
1067	RULER
1068	FUSELAGE
1069	ELECTRIC BOX
1070	LOCK NUT M12- 1.75
1071	BIG WASHER
1072	CONNECTING STRUT
1102	UPPER END WASHER

NO.	DESCRIPTION
1103	END SCREW M6-1 X16
1110	ELECTRICITY LABEL
1150	PC BOARD
1151	LOCK SLEEVE
1152	ROTOR SHAFT
1153	KEY 4 X 4 X 6
1154	SPRING SUPPORT
1155	TORSION SPRING
1156	COVER
1157	HEX NUT M8-1.25
1159	SUPPORTING SHANK
1161	ROTOR SHAFT SPACER
1162	SHANK COVER SPACER
1163	SHANK COVER
1164	TOP COVER
1200	ROLL PIN 6 X 30
1201	PHLP HD SCR M10-1.5 X 40
1202	ROLL PIN 6 X 30
1203	PHLP HD SCR M6-1 X 8
1204	SUPPORT
1205	SUPPORT BOLT
1206	SUPPORT PLATE

NO.	DESCRIPTION
1029	HEX NUT M6-1.0
1030	HANDLE
1043	SET SCREW M6-1.0 X 22
1048	HIGH/LOW NOTICE
1049	SPINDLE BOX
1050	PINION
1051	KEY4 X 4 X 25
1052	BEVEL GEAR
1053	EXT RETAINING RING 12MM
1054	BALL 5 MM
1055	SPRING 0.8X 0.8 X 10MM
1056	PHLP HD SCR M6-1 X 8
1057	HANDLE STOCK
1058	OPERATING LEVER
1059	LEVER CAP
1060	CAP SCREW
1061	GUIDE FINGER
1062	CAP SCREWM6-1 X 25
1063	SPINDLE BOX SEAT
1064	WEDGE
1075	CAP SCREW M6-1.0 X 20
1078	KEY5 X 5 X 40
1079	SPINDLE
1080	TRANSMISSION GEAR



NO.	DESCRIPTION
1081	SUPPORT BLOCK
1082	PHLP HD SCR M5-.8 X 20
1083	PIN 4 X 15
1084	WORM
1085	SLEEVE
1086	ROLLPIN 3 X 12
1087	ROLLPIN 3 X 12
1088	ADJUSTABLE UNION
1089	BRACKET
1090	PHLP HD SCR M5-.8 X 25
1091	DIAL
1092	SPRINGSTEEL 1.0
1093	SMALL HAND WHEEL
1094	PHLP HD SCR M5-.8 X 16
1095	SMALL SHAFT
1096	COVER
1097	PHLP HD SCR M4-.7 X 6
1098	DUST COVER SUPPORT
1099	PHLP HD SCR M5-.8 X 16
1100	DUST GUARD
1101	CLAMP BOLT M6-1X12
1104	SET SCREW M6-1X6
1105	SPRING 0.8X 4.8X 10MM
1106	BALL 5 MM

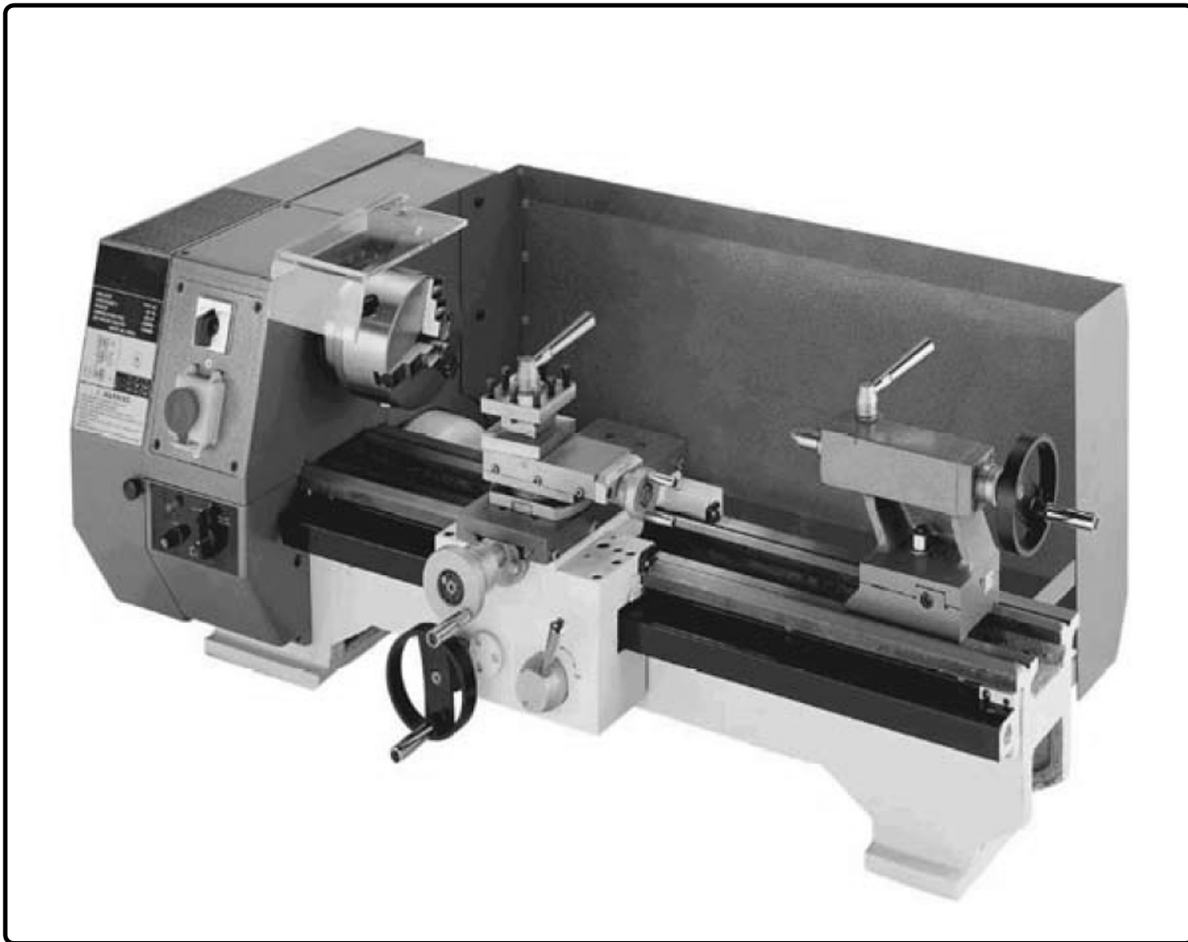
NO.	DESCRIPTION
1107	HANDLE SEAT
1108	DBL HD BOLT M8-1.25 X 70
1109	KNOB
1110	ELECTRICITY LABEL
1111	CONTROLLER
1112	LABEL ON CONTROLLER
1113	SHAFT I
1114	KEY 4 X 4 X 45
1115	INT RETAINING RING 12MM
1116	SPACING RING
1117	SMALL SHAFT
1118	SPACING RING
1119	SPINDLE NUT
1120	KEY 5 X 5 X 30
1121	CAP SCREW M5-.8 X 8
1122	BEARING COVER
1123	BALL BEARING 80206
1124	MAIN LABEL
1125	FINE FEEDING LABEL
1126	PROTECTING COVER
1127	MOTOR
1128	MOTORGear
1129	EXT RETAINING RING 9MM
1130	MOTOR SEAT

NO.	DESCRIPTION
1131	FLAT HD SCR M6-1 X 12
1132	PHLP HD SCR M5-.8 X 8
1133	LAMP
1134	SPEED CONTROL KNOB
1135	SWITCH
1136	FUSE BOX
1137	STOP SWITCH
1138	GEAR
1139	BALL BEARING 80101
1140	TRANSMISSION GEAR
1141	BAR
1142	LINKING BOARD
1143	SET SCREW M5-0.8X 8
1144	TAPPING SCREW 2.9 X 8MM
1145	H/L LABEL
1146	MOTOR COVER
1147	MOTOR FLANGE
1148	PHLP HD SCR M6-1.0X 10
1158	PROP
1160	SHANK SCREW
1165	PHLP HD SCR M3-.5 X 6
1166	PHLP HD SCR M6-1 X 8
1167	FLAT WASHER 5MM
1168	DEPTH STOP NOTICE



MODEL CX705 BENCH LATHE

USER MANUAL (2 of 2)



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Safety Instructions For Lathe

1. **MAKE SURE ALL GUARDS** are in place and that the lathe sits on a flat, stable surface.
2. **BEFORE STARTING THE LATHE** be certain the workpiece has been properly engaged in the chuck, tailstock, center, and that there is adequate clearance for full motion.
3. **ADJUST TOOL POST** to provide proper support for the turning tool you will be using. Test tool post clearance by rotating workpiece by hand before turning lathe on.
4. **SELECT THE TURNING SPEED** which is appropriate for the type of work, material, and tool bit. Allow the lathe to gain its full speed before beginning a cut.
5. **NEVER REVERSE MOTOR DIRECTION** while the lathe is in motion.
6. **DO NOT STOP LATHE USING YOUR HAND** against the workpiece or chuck.
7. **DO NOT LEAVE LATHE RUNNING UNATTENDED** for any reason.
8. **NEVER LEAVE A CHUCK KEY IN THE LATHE CHUCK.**
9. **NEVER OPERATE THE LATHE WITH DAMAGED OR WORN PARTS.** Maintain your lathe in proper working condition. Perform routine inspections and maintenance promptly when called for. Put away adjustment tools after use.
10. **MAKE SURE LATHE IS TURNED OFF**, disconnected from its power source and all moving parts have come to a complete stop before starting any inspection, adjustment, or maintenance procedure.
11. **KEEP LOOSE CLOTHING ARTICLES** such as sleeves, belts or jewelry items away from the lathe and drill spindles.
12. **ALWAYS USE THE PROPER CUTTING TOOLS** for the material you are turning, make certain they are sharp and that they are held firmly in the tool post.
13. **ALWAYS PLACE A BOARD OR PIECE OF PLYWOOD ACROSS THE BEDWAY** when removing or installing chucks to avoid the possibility of a finger pinch occurring between a loose chuck and the edges of the bedway.

CAUTION

No list of safety guidelines can be complete. Every shop environment is different. Always consider safety first, as it applies to your individual working conditions. Use this and other machinery with caution and respect. Failure to do so could result in serious personal injury, damage to equipment or poor work results.

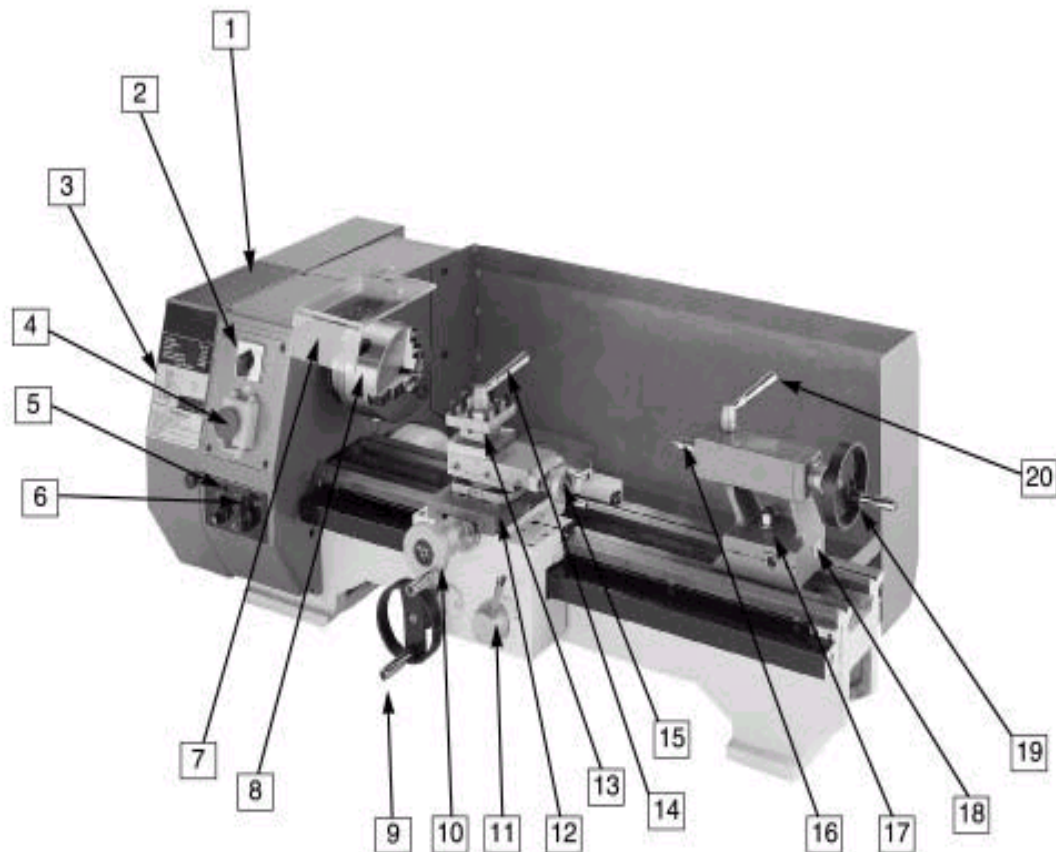
WARNING

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GROUNDING

In the event of an electrical short, grounding reduces the risk of electric shock by providing a path of least resistance to disperse electric current. The outlet must be properly installed and grounded in accordance with all local codes and ordinances.

IDENTIFICATION



The following is a list of controls and components on the Lathe. Please take time to become familiar with each term and its location. These terms will be used throughout the manual and knowing them is essential to understanding the instructions and terminology used in this manual.

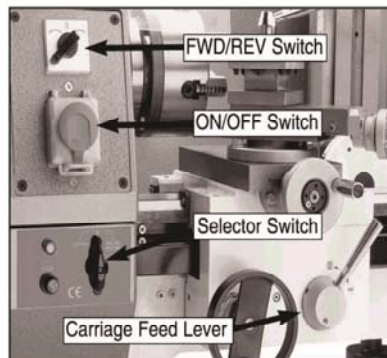
- | | |
|--|--|
| 1. Thread Pitch Gearing & Speed Charts | 11. Automatic Carriage Feed Lever |
| 2. Lathe Forward/Reverse Switch | 12. Compound Slide |
| 3. Machine ID/Safety Label | 13. Tool Post |
| 4. Lathe ON/OFF, Emergency Stop Switch | 14. Tool Post Lock Handle |
| 5. Lathe Power Indicator Light | 15. Compound Slide Handwheel |
| 6. Selector Switch | 16. Tailstock Center |
| 7. Headstock Eyeshield | 17. Tailstock Clamp Bolt |
| 8. Lathe Chuck | 18. Tailstock Axis Alignment Indicator |
| 9. Carriage Feed Handwheel | 19. Tailstock Barrel Handwheel |
| 10. Cross Slide Handwheel | 20. Tailstock Center Lock |

Test Run Lathe

Before continuing to Operate, test run the lathe to make sure it runs properly.

To test run the lathe:

1. Make sure that there is NOT a chuck key inserted in the chuck, and that the lathe eye-shield is in the down position over the lathe chuck. *Make this step a habit that you perform every time you start the lathe.*
2. Familiarize yourself with the lathe controls shown in Figure below. Make sure the STOP button is all the way down before continuing.

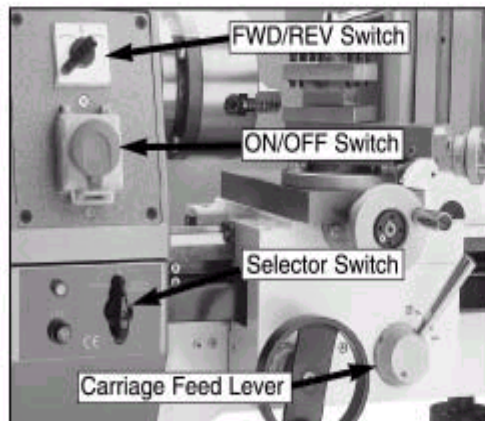


Lathe controls

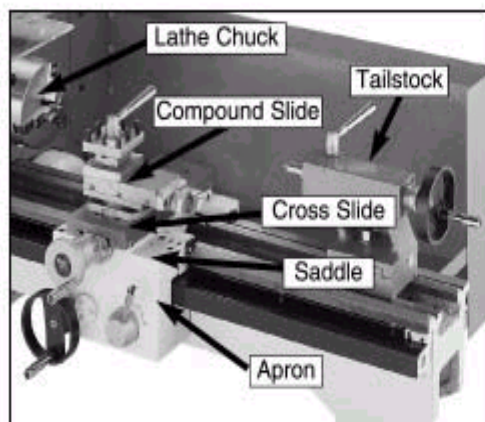
3. Plug the lathe into the power outlet!
4. Move the carriage feed lever up to the disengage mode. It is important that the carriage feed is NOT moving and is in the neutral position until later.
5. Turn the to left Selector switch to the "CUTTING" position. The lathe power indicator light should light up. *Note—If it does not light up, unplug the machine and check the fuse, your power source, and the connections on the machine before attempting to start the lathe. Call our service department if you cannot easily resolve the issue.*
6. Turn the FWD/REV switch clockwise. This should make the lathe chuck turn clockwise when you start the machine.
7. Flip up the emergency stop button to reveal the red and green ON/OFF buttons.
8. Stand to the side of the lathe chuck line of rotation, and press the green button to turn the lathe ON. If the carriage starts moving, immediately push the STOP button and disengage the carriage feed lever, then restart the lathe.
9. Allow the lathe to run for at least two full minutes to make sure it is running satisfactorily.
10. Press the lathe emergency stop button to turn the lathe OFF.
11. After the lathe chuck has come to a complete stop, turn the FWD/REV switch counter-clockwise.
12. Stand to the side of the lathe chuck line of rotation, and press the green button to turn the lathe ON.
13. Allow the lathe to run for at least two full minutes to make sure it is running satisfactorily.
14. Press the emergency stop button to turn the lathe OFF.
15. After the lathe has come to a complete stop, engage the carriage handwheel, rotate the handwheel to center the carriage on the bed, then disengage the handwheel.
16. Engage the automatic carriage feed lever.
17. Stand to the side of the lathe chuck line of rotation, and press the green button to turn the lathe ON.
18. Verify that the carriage moves along the bed, and press the emergency stop button to turn the lathe OFF.

OPERATIONS

To get the most out of your machine, please take the time to familiarize yourself with the various controls as shown in Figures below.



Lathe controls



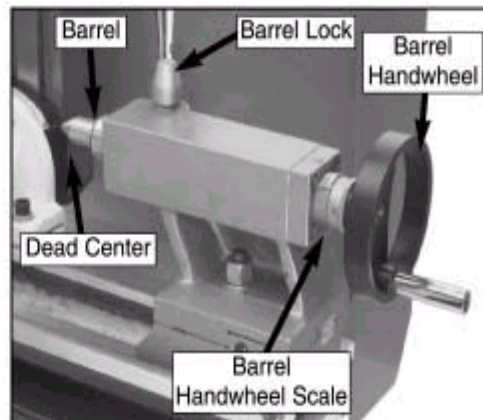
Lathe components

Installing Tailstock Dead Center

There are 2 dead centers included with the Lathe. The smaller dead center is a MT#2 (Morse Taper) and fits in the tailstock barrel.

To install the tailstock dead center:

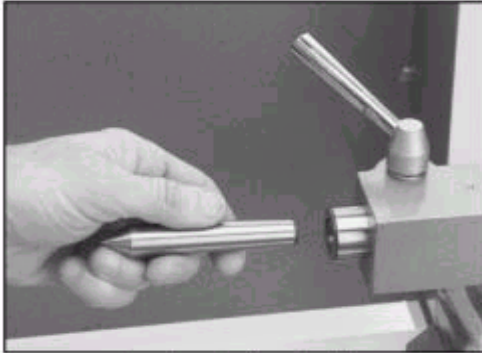
1. Familiarize yourself with the tailstock components shown below.



Tailstock components

2. Make sure that the MT#2 dead center and tailstock barrel are clean and free of any dirt, dust, grease or oil. These parts will last longer and remain accurate when properly cleaned before each assembly. Morse tapers will not interlock when dirt or oil are present on the mounting surfaces.

3. Insert the end of the dead center into the tailstock barrel, as shown below, until it seats tight enough that it will not rotate when turned by hand. *Note—do not worry about pushing the dead center into the barrel too far. The force of the center contacting a mounted workpiece will fully seat the taper when the handwheel is tightened.*
4. Tighten the barrel lock to prevent the tailstock barrel from moving during operation.



Inserting dead center into tailstock barrel

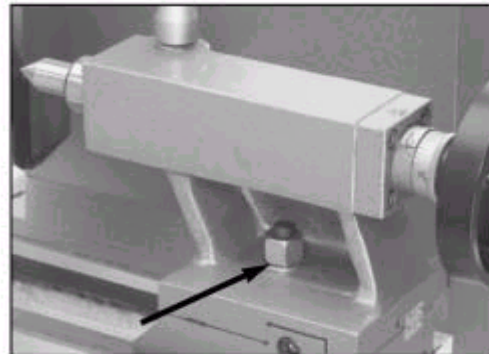
Removing Tailstock Dead Center

To remove the tailstock dead center:

1. Use the barrel handwheel to move the tailstock barrel all the way back into the tailstock until the handwheel will no longer turn.
2. Pull the dead center out of the tailstock barrel.

Adjusting Tailstock Longitude Position

The tailstock on the Lathe clamps to the bed with the nut shown below. This nut allows the tailstock to be positioned longitudinally along the bed and then locked in place.



Tailstock clamp bolt

To adjust the tailstock longitude position:

1. Use a 17mm wrench to loosen the tailstock clamp bolt.
2. With your hands, move the tailstock into position along the bed.
3. Tighten the tailstock clamp bolt to secure the tailstock into position.

Adjusting Cross Slide

The cross slide is only designed to move perpendicular to the longitudinal axis of the lathe, and it features a scale on the handwheel that displays graduations of one thousandths of an inch (.001").

To adjust the cross slide:

1. Using the handwheel, back the cross slide away from your starting point by at least .015", then move the cross slide forward to your starting point. *Note—this procedure will clear any free movement (or backlash) in the lead screw so your handwheel scale reading will be accurate.*
2. Hold the handwheel still and turn the scale so the "0" mark lines up with the ".000" mark on the cross slide, as shown in **Figure** . As long as you avoid backlash by continuing to move the cross slide in the same direction, the scale on the handwheel will be accurate.



Adjusting handwheel scale.

3. After moving the cross slide backward after your operation, remember to clear the backlash before moving the cross slide forward to the "0" mark for the next cut.

Adjusting Compound Slide

Similar to the cross slide, the compound slide features a scale that displays graduations of one thousandths of an inch (.001"). Unlike the cross slide, the compound slide can be rotated to a set angle and then it can be moved back and forth along the axis of that angle.

To adjust the compound slide:

1. Loosen the compound slide bolts shown in **Figure** to allow it to be rotated.

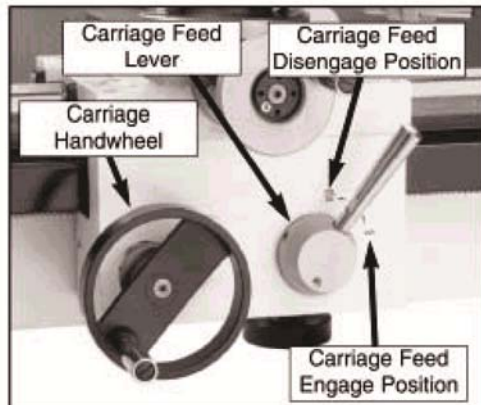


Compound slide bolts.

2. Rotate the compound slide to the angle needed for your procedure.
3. Tighten the compound slide bolts, and check the angle again to make sure it did not move during tightening.
4. Use the compound slide handwheel to move the tool back and forth along the axis of the new angle. Similar to adjusting the cross slide handwheel, make sure the threads are engaging and all backlash has been cleared before you set the handwheel scale to "0", or it will not be accurate.

Adjusting Carriage

Like most lathes, the longitudinal movement of the carriage (carriage feed) on the Lathe can be controlled both manually and automatically. Before proceeding, take a closer look at the carriage controls shown below



Carriage controls

To move the carriage feed manually:

1. Push the carriage feed handwheel toward the carriage to engage the gear on the lead screw.
2. Rotate the handwheel clockwise to move the carriage right and rotate the handwheel counterclockwise to move the carriage left.
3. Set the handwheel scale in the same manner as described in the "Adjusting Cross Slide" instructions, and be sure to account for the backlash.

To use the automatic carriage feed:

1. Select the desired feed rate you need by looking at the charts on the lathe drive cover. When new, The Lathe is geared for a carriage feed rate of 0.005" per revolution.

Use the manual feed handwheel to position the carriage to your desired starting point and set the scale on the handwheel to "0".

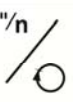

2. Move the carriage feed lever down to engage the half-nut, which in turn, makes the automatic carriage feed active.
3. Pull out the carriage manual feed handwheel to unlock it so it does not rotate when the automatic carriage feed is engaged.

The carriage feed will now move forward or backward, depending on which direction you have selected for lathe rotation.

Understanding Gear Charts



The Lathe can be geared for a variety of different feed rates, so charts are placed on the drive cover of the lathe that explain how to set up the gear combinations for each type of carriage feed application. These applications are broken into two categories of charts—turning and threading.


Turning Chart—The speeds given on the turning chart represent standard speeds for most types of turning applications. See below.



$\frac{1}{n}$ 			
		0.005"	0.010"
C	B	35 80	50 80
D	E	90 30	66 30
	F	100	100


Turning chart

Threading Charts—By arranging the gears as shown on the charts, you can set up the carriage feed to cut any of the thread pitches displayed. See below.

$\frac{1}{n}$ 	8	9	10	11	12	14
B	80	90	70	70	70	70
D E	75 40	60 40	72 40	72 40	72	60 40
F 	50	45	60	66	40	70

$\frac{1}{n}$ 	16	18	20	24	32	40
B	70	70	70	70	70	70
D E	60 40	60 80	60 80	50 40	45 80	30 40
F	80	45	50	100	60	100

mm 	0.4	0.5	0.6	0.7	0.8	1
C B	68 80	68 80	68 80	72 80	68 80	68 80
D E	72 30	72 35	72 45	75 48	72 48	60
F 	75	70	75	70	60	72

mm 	1.25	1.5	1.75	2	2.5	3
C B	68 72	75 72	68 72	68 72	66 75	80
D E	80 60	80 68	80 70	80 70	80 35	75 35
F	48	50	40	35	30	60

Threading charts

This is how to read the feed rate charts:

1. The box in the upper left-hand corner of each chart tells whether that chart represents carriage feed movement for standard or imperial threads. These boxes are shaded below.

$\frac{1}{n}$	16	18	20	24
B	70	70	70	70
D E	60 40	60 80	60 80	50 40
F	80	45	50	100
mm	0.4	0.5	0.6	0.7
C B	68 80	68 80	68 80	68 40
D E	72 20	72 25	72 45	72 25

The shaded box indicates whether the chart is for standard or imperial threads

2. The boxes in the top row of each chart (excluding the box in the left-hand corner) shows the thread pitches listed on that chart. These boxes are shaded below.

$\frac{1}{n}$	16	18	20	24	32	40
B	70	70	70	70	70	70
D E	60 40	60 80	60 80	50 40	45 80	30 40
F	80	45	50	100	60	100

The shaded boxes show the thread pitches listed on this chart

3. The boxes on the left-hand column (excluding the box in the upper left-hand corner) represent the gear positions on each shaft. These boxes are shaded below and the shafts are called out with arrows.

$\frac{1}{n}$	16
B	70
D E	60 40
F	80

Upper Adjustable Shaft →
Lower Adjustable Shaft →
Pivot Shaft →

The shaded boxes show the thread pitches listed on this chart

4. Each shaft has room for two positions to mount the gears—a forward position and a rear position. Figure below separates these positions into different shades for you to understand better.

$\frac{1}{n}$	16	18	20	24
B	70	70	70	70
D E	60 40	60 80	60 80	50 40
F	80	45	50	100

↑ Rear
↑ Forward


The shaded boxes show the thread pitches listed on this chart

Both forward and rear positions must be filled on the shaft in order for the gears to work properly. A good example of this is the blank spot "F," as shown in the chart above. Although the chart shows this as a blank spot, there should actually be a spacer in this position on the machine. This spacer is only reflects ACTIVE gear positions.

NOTICE

On some setups, smaller gears must be used as spacers on the adjustable shafts.

- The lines between gears "B" & "E" and gears "D" & "F" on the chart below indicate where the gears should be in mesh.

			16	18
	B		70	7
	D E		60 40	60 8
	F		80	45

The shaded boxes highlight the gear mesh lines

- The boxes shaded below represent the actual gear combinations required to cut the thread pitches.

$\frac{1}{n}$	16	18	20	24	32	40
B	70	70	70	70	70	70
D E	60 40	60 80	60 80	50 40	45 80	30 40
F	80	45	50	100	60	100

The shaded boxes show specific gear setups

Here is a real-world example of a gear setup as shown on the chart:

When the lathe/mill is shipped from the factory, it is geared for a carriage feed rate of .005" per spindle revolution, or the gear combination shaded below


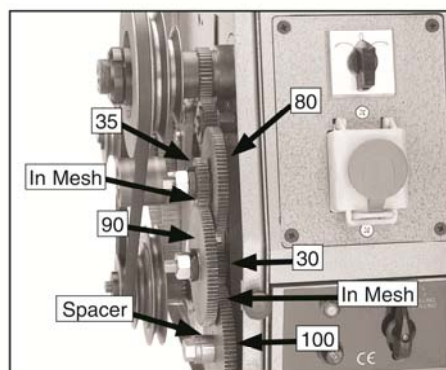
$\frac{1}{n}$			
		0.005"	0.010"
C B		35 80	50 80
D E		90 30	66 30
F		100	100

Chart showing gear setup for .005".

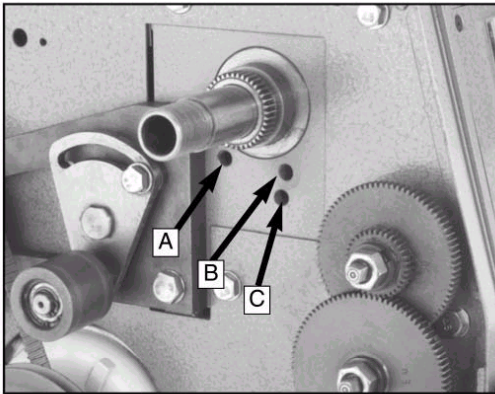
shows a profile of the .005" feed rate actual gear setup on the machine. Notice how the gears mesh together in the locations displayed on the chart.



Actual gear setup for .005" feed rate.

Reverse Threading

The Lathe can be setup to turn left-handed threads by adding another fixed-shaft gear and moving the original fixed-shaft gear to another mounting location. Figure below shows the three mounting locations for fixed-shaft gears (spindle drive pulley is removed for clarity). For illustration purposes, we label these mounting positions A, B & C.



Fixed-shaft gear mounting positions

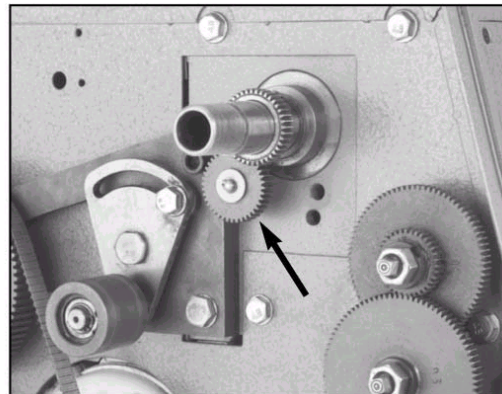
To set up the gears for reverse threading:

1. **Disconnect the lathe from the power source!**
2. Locate the extra fixed-shaft gear (shown in Figure below) in your inventory of loose parts.



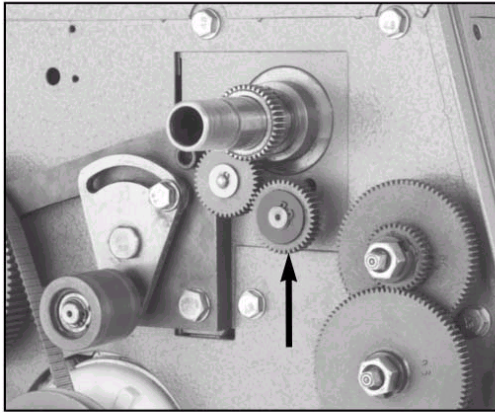
Extra fixed-shaft gear

3. Thread the extra fixed-shaft gear into mounting location "A" as shown below.



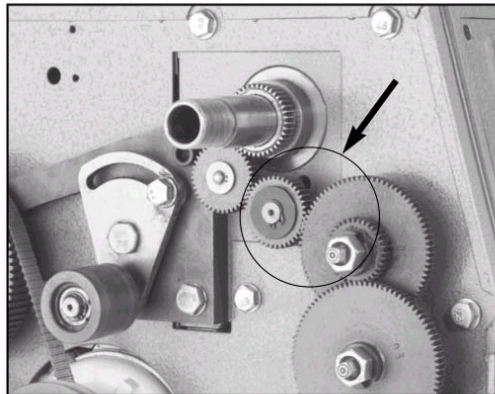
Extra fixed-shaft gear mounted in position "A"

4. When the machine is shipped, a fixed-shaft gear is in position "C." Remove that fixed-shaft gear from mounting location "C" and thread it into mounting location "B" as shown below.



Fixed-shaft gear mounted in position "B"

5. Loosen the cap screw on the gear bracket, and pivot the bracket so the top gear meshes with the fixed-shaft gear that is in position "B," as shown below.

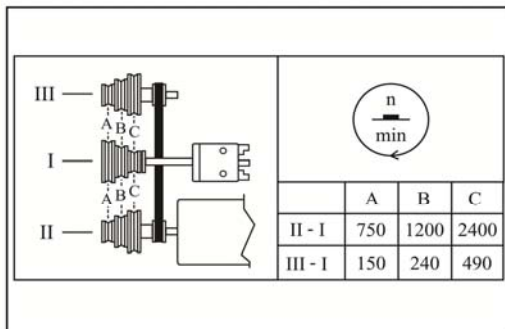


All gears in mesh for reverse threading operations

6. Tighten the cap screw in the gear bracket to keep it from pivoting.
7. Spin the lathe chuck by hand to ensure that the gears do not bind.
8. Replace the cover and test run the machine before proceeding with your specific operation.

Changing Speeds

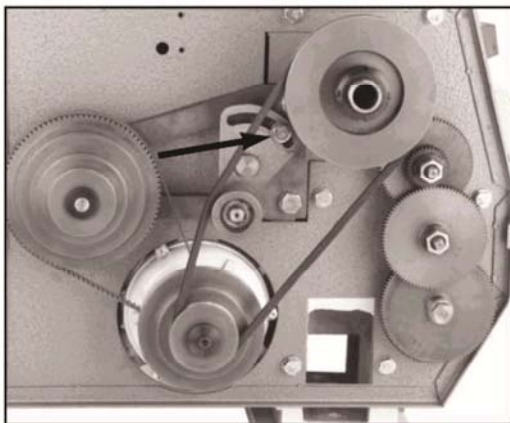
The Lathe features 6 speeds—150, 240, 490, 750, 1200 & 2400 RPM. (May have some small changes due to the power frequency.) These speeds can be changed by positioning the V-belt in different sheaves on the drive pulleys, as illustrated in the speed change chart on the machine label or in below.



Speed change chart

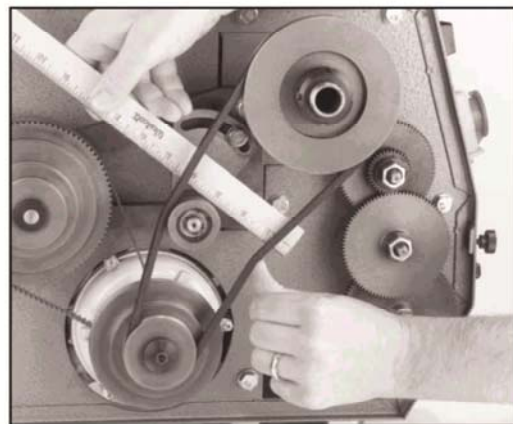
To change the belt position on the pulleys:

1. **Disconnect the lathe from the power source!**
2. Open the drive belt cover.
3. Loosen the bolt on the tensioner bracket (shown in Figure below) with a 19mm wrench.



Tensioner adjustment bolt

4. Move the pulley bracket away from the belt.
5. Position the belt into the pulley sheaves that dictate the speed required for your operation.
6. Move the pulley bracket into the belt and tension it until there is about 12mm deflection on the side of the belt that is opposite of where the tensioner is making contact. *Figure below* shows how to check for proper tension by using a ruler and your thumb. *Note—only moderate pressure is needed to check belt tension!*



Checking for proper V-belt tension

7. Replace the drive belt cover.

CAUTION

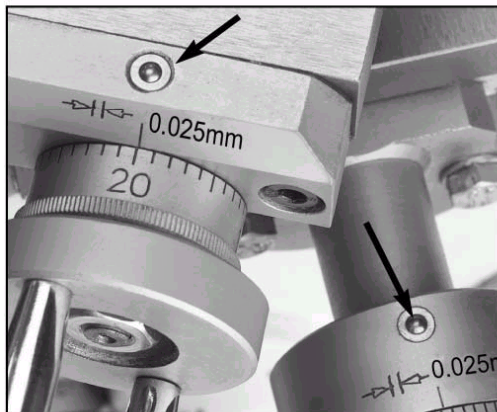
Some threading operations may damage the lead screw if performed at high speeds. Always use the slowest speed possible for your particular operation!

MAINTENANCE

Lubrication

For lubricating your machine, we recommend that you use a manual oiler (oil can) filled with ISO 68 or SAE 20W non-detergent oil or similar lubricant.

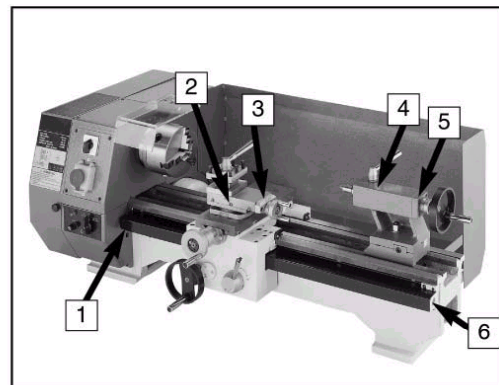
Ball fittings—Shown in Figure below, ball fittings are responsible for the majority of the machine lubrication. To lubricate ball fittings, depress the ball with the tip of the oil can nozzle and squirt a little oil inside the fitting. Make sure to clean the outside of the ball fitting before and after each use to keep out contaminants.



Lubrication ball fittings

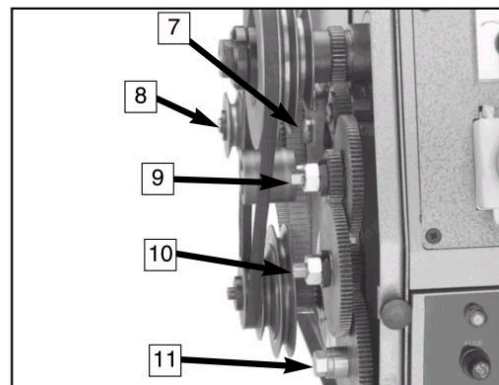
Ball Fitting Lubrication Points—Lubricate the following areas every 8 hours of actual use:

1. Left Leadscrew Support
2. Compound Slide
3. Compound Slide Leadscrew
4. Tailstock Barrel
5. Tailstock Leadscrew
6. Right Leadscrew Support



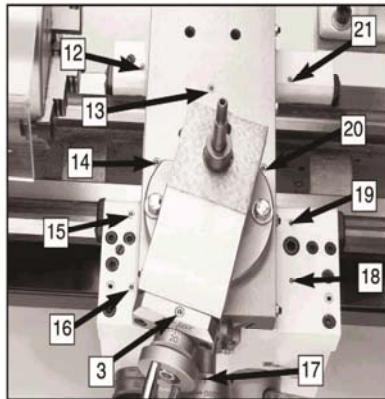
Ball fitting lubrication points

7. Fixed-Shaft Gear
8. Synchronized Counter Pulley
9. Upper Adjustable Shaft
10. Lower Adjustable Shaft
11. Pivot Shaft



Ball fitting lubrication points

- 12. Bed Guide
- 13. Cross Slide Leadscrew
- 14. Bed Guide
- 15. Bed Guide
- 16. Apron
- 17. Cross Slide Leadscrew Support
- 18. Apron
- 19. Bed Guide
- 20. Bed Guide
- 21. Bed Guide



Ball fitting lubrication points

Gears—Apply a minimal amount of oil to the teeth of the end gears after assembly and each 8 hours of actual use. Avoid getting oil on the belt or pulleys when lubricating. Also, regularly apply lubrication to all the ball fittings drive box.

Long Leadscrew—Apply a minimal amount directly on the rack every 8 hours of actual use.

Carriage Rack—Apply a minimal amount directly on the rack every 8 hours of actual use.

Checking V-Belt

To ensure optimum power transmission from the motor, the V-belts must be in good condition and must operate under proper tension. The belts should be checked for cracks, fraying, and wear at least every 3 months—more often if the machine is used daily.

The check the V-belt:

1. **Unplug the lathe from its power source!**
2. Open the drive cover.
3. Note the condition of the V-belt. If the V-belt is cracked, frayed, or glazed; it should be replaced.

SERVICE ADJUSTMENTS

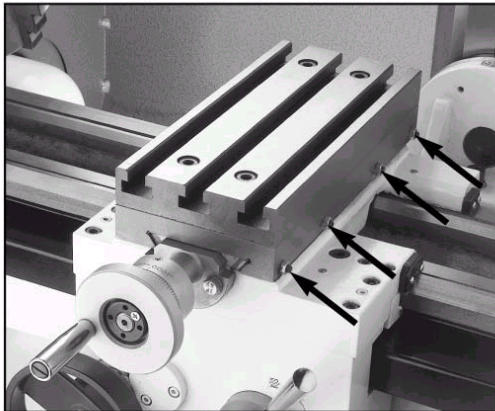
Gibs

There are three gib adjustments for the lathe—the cross-slide gib, the compound slide gib and the apron gib.

NOTICE

When adjusting gibbs, keep in mind that the goal of gib adjustment is to remove unnecessary sloppiness without causing the slides to bind. Loose gibbs may cause poor finishes on the workpiece and may cause undue wear on the slide. Over-tightening may cause premature wear on the slide, leadscrew and nut.

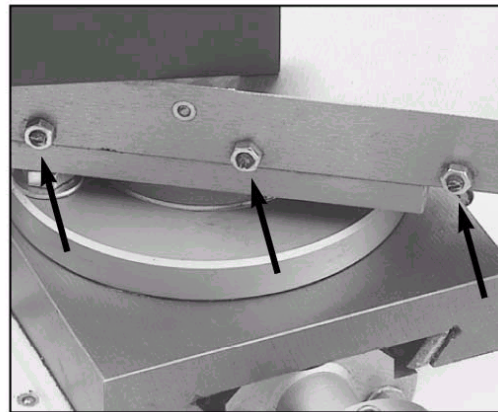
Cross-slide Gib—The gib on the cross-slide is adjusted by tightening or loosening the 4 gib screws located on the right-hand side of the slide. See Figure below. Before adjusting the gib screws, loosen their jam nuts.



Cross slide gib screws

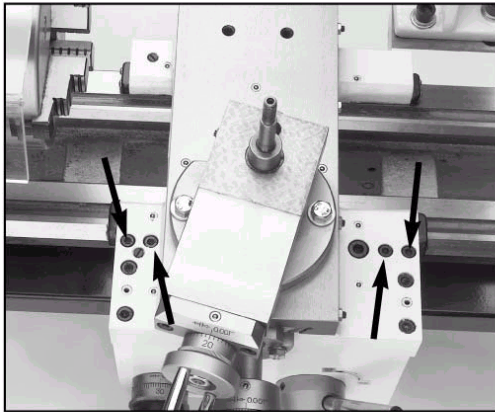
The gib is held in place by the setscrews. **DO NOT overtighten.** The gib is properly adjusted when a slight drag is detected while turning the hand crank. This drag should be evenly distributed among the 4 setscrews, so adjust each screw until a slight drag is detected while the hand crank is turned.

Compound Gib—The gib on the compound has 3 screws that maintain tension on the slide. These screws are held in place with retaining nuts. To adjust, loosen the retaining nuts and then tighten the screws as needed. When proper tension has been detected by turning the hand crank on the compound, tighten the retaining nuts while maintaining the position of the screw with an Allen® wrench as in Figure below.

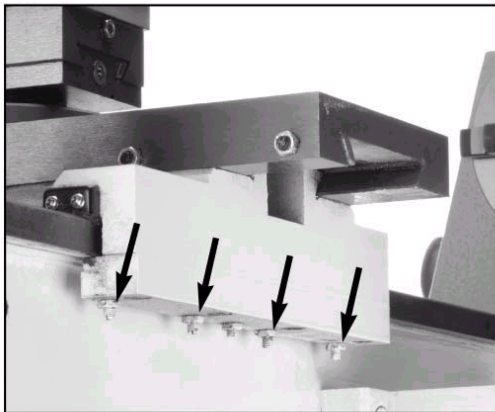


Compound slide gib screws

Saddle Gibs—There are 4 tensioning screws for both the front and rear saddle gibs. Before making adjustments to the saddle gib, ensure that the front lock lever is loose by turning it counter-clockwise. See Figures below. It is important the screws are tightened evenly. A slight drag should be detected while turning the hand crank at the end of the lathe.



Front saddle gib screws



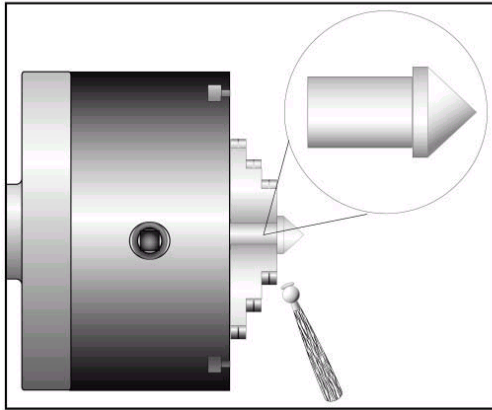
Rear saddle gib screws

Aligning Tailstock

The tailstock on the Lathe is aligned with the headstock at the factory. However, at times you may wish to misalign the tailstock for certain operations; then, realign it when you are finished.

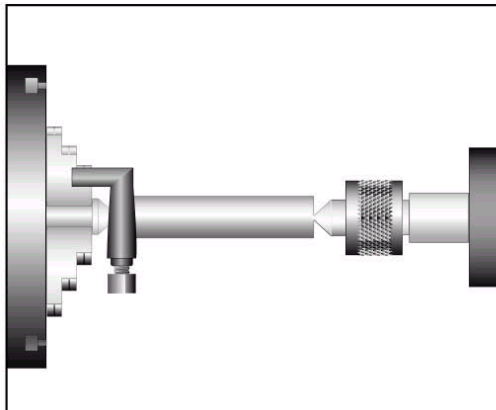
To align the tailstock:

1. Center drill a 150mm long piece of round cold rolled stock on both ends. Set it aside for use in **step 4**.
2. Make a dead center by turning a shoulder to make a shank, then flip the piece over in the chuck and turn a 60° point. See Figure below. *Note—As long as it remains in the chuck, the point of your center will be accurate to your spindle axis. Keep in mind that the point will have to be refinished whenever it is removed and returned to the chuck.*



Finished dead center

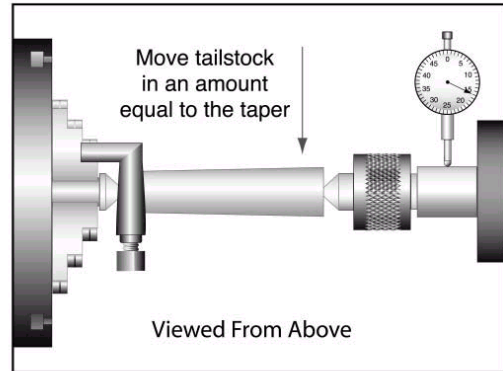
3. Place a center in your tailstock.
4. Attach a lathe dog to the bar stock and mount it between the centers. See Figure below.
5. Turn approximately 0.25mm off of the diameter.



Bar stock mounted on centers

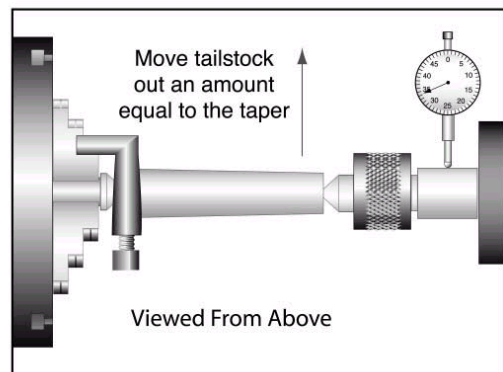
NOTICE

Before making adjustments to the tailstock, mount a dial indicator so that the dial plunger is on the tailstock barrel. See Figure below.



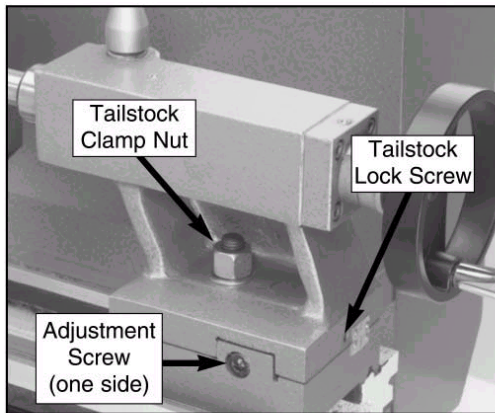
Adjusting for headstock end taper

6. Measure the workpiece with a micrometer. If the stock is fat at the tailstock end, the tailstock needs to be moved toward you the amount of the taper. See **Figure above**. If the stock is thinner at the tailstock end, the tailstock needs to be moved away from the operator by at least the amount of the taper. See **Figure below**.



Adjusting for tailstock end taper

7. Loosen the tailstock clamp nut and the lock screw shown in Figure below.

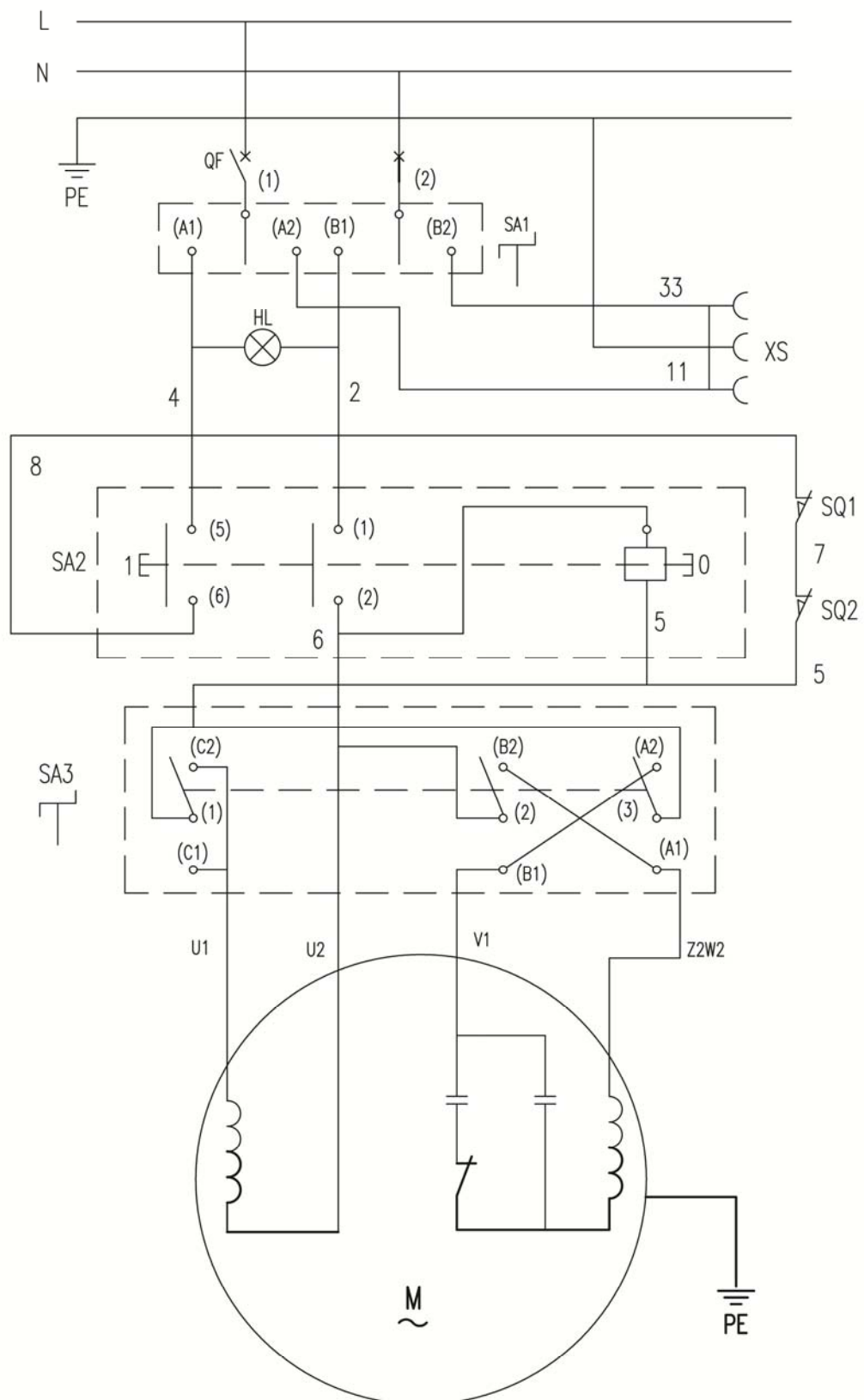


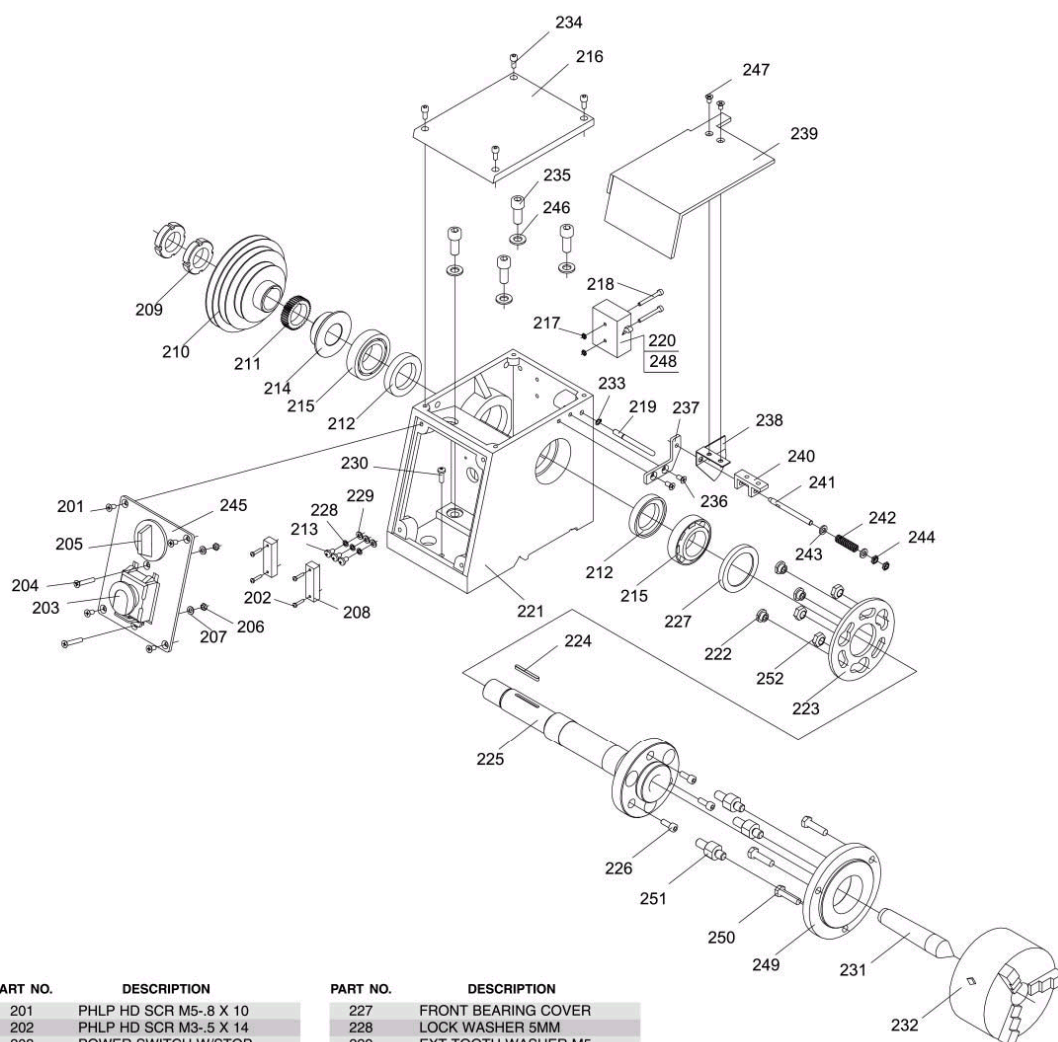
Tailstock offset adjustment screw

8. Use the tailstock adjustment screws on both sides to adjust move the tailstock offset by the amount of the taper.
9. Tighten the clamp nut, lock screw and adjustment screws. Be careful not to move the tailstock out of position when tightening the adjustment screws.
10. Turn another 0.25mm off of the stock and check for taper. Repeat **steps 7-9** as necessary until the desired amount of accuracy is achieved.

Bearing Preload

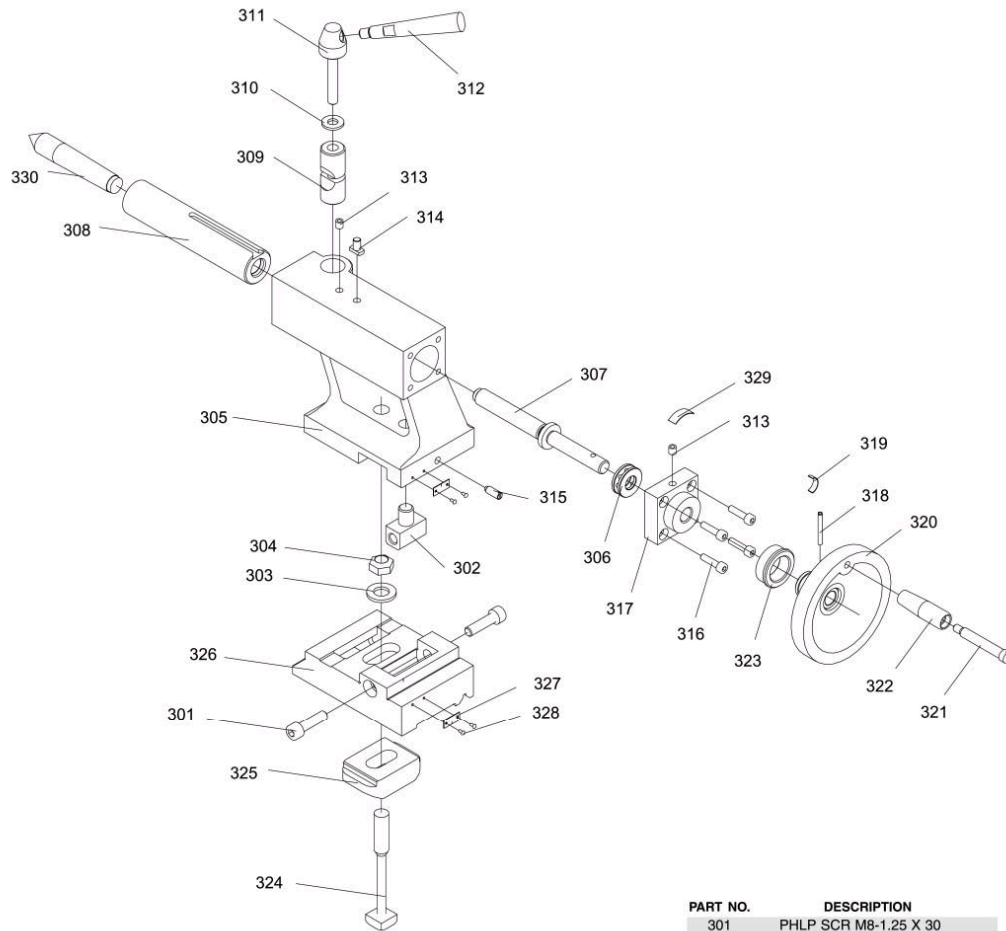
This lathe is shipped from the factory with the bearing preload already set. If the preload requires resetting for whatever reason, please contact our service department for further instructions.



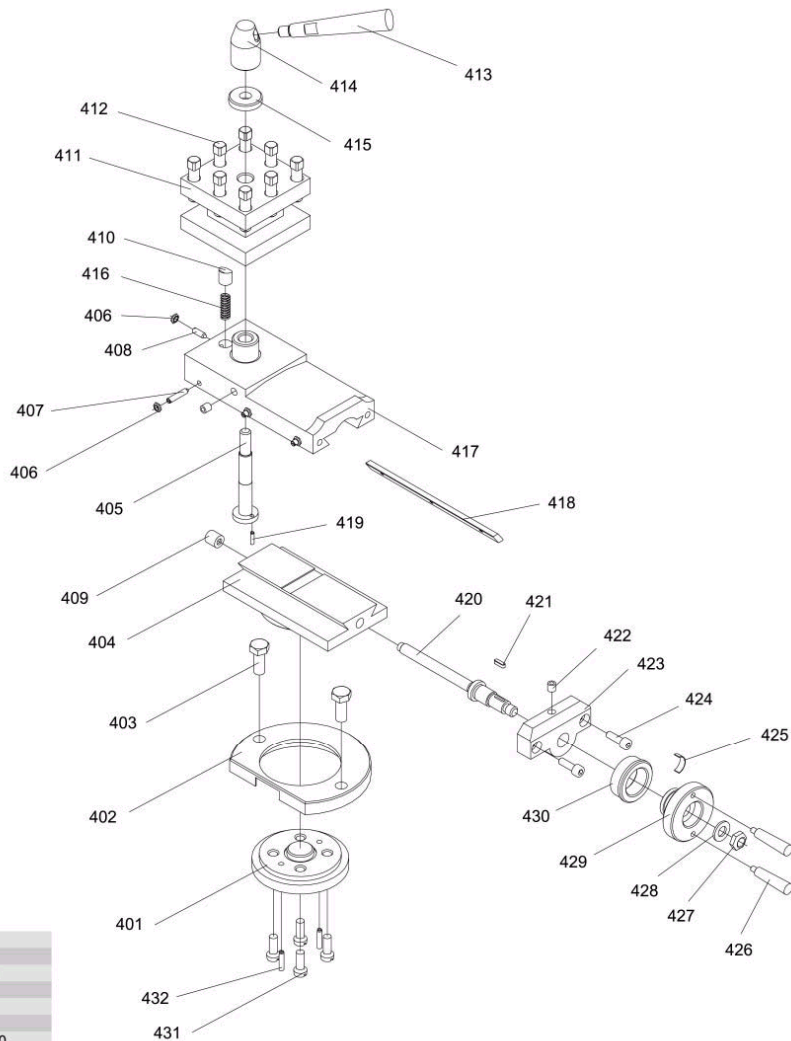


PART NO.	DESCRIPTION
201	PHLP HD SCR M5-.8 X 10
202	PHLP HD SCR M3-.5 X 14
203	POWER SWITCH W/STOP
204	PHLP HD SCR M5-.8 X 30
205	FWD/REV SWITCH
206	HEX NUT M5-0.8
207	FLAT WASHER 5MM
208	CONNECTOR
209	ROUND NUT M27-1.5
210	SPINDLE PULLEY
211	SPINDLE GEAR
212	OIL RING
213	PHLP HD SCR M5-.8 X 8
214	SPINDLE SPACER
215	BEARING 32007
216	SPINDLE BOX COVER
217	HEX NUT M4-0.7
218	PHLP HD SCR M4-.7 X 35
219	PIN SHAFT
220	BOX FOR MICRO SWITCH
221	HEAD STOCK BODY
222	FIXING NUT
223	ROTATABLE SPACER
224	KEY 4 X 4 X 40
225	SPINDLE
226	PHLP HD SCR M6-1 X 16

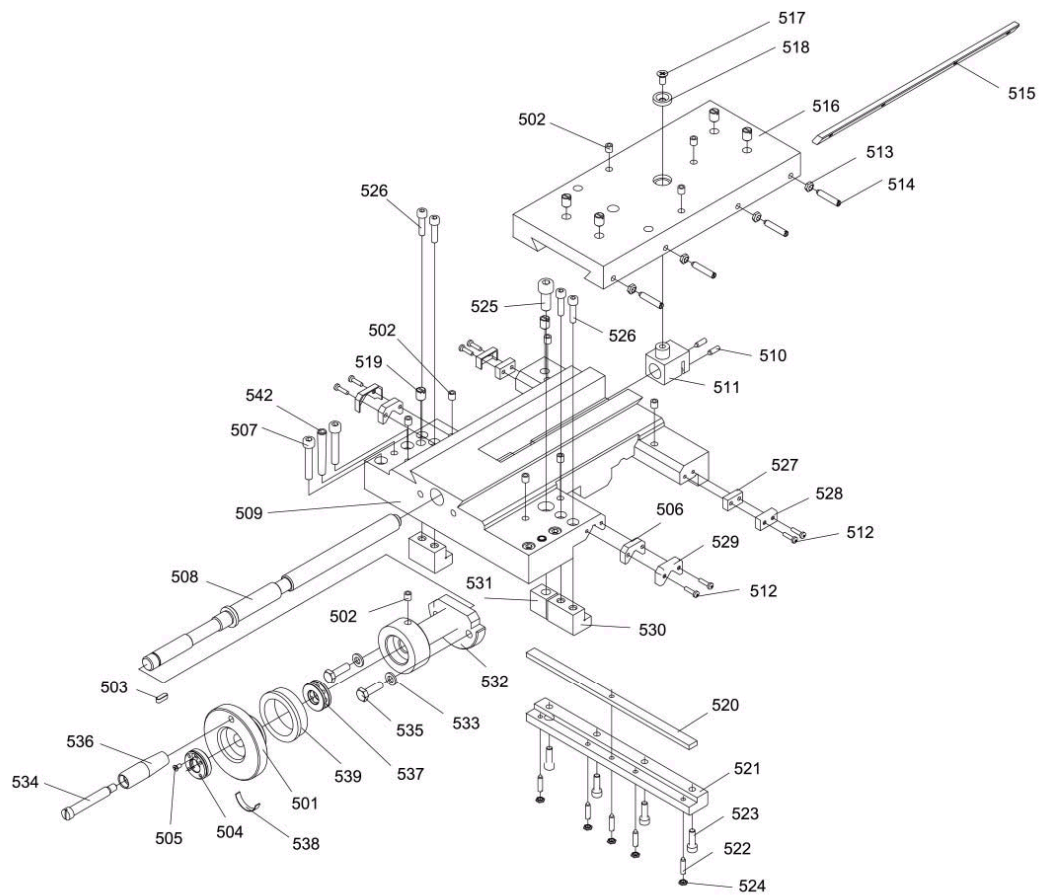
PART NO.	DESCRIPTION
227	FRONT BEARING COVER
228	LOCK WASHER 5MM
229	EXT TOOTH WASHER M5
230	PHLP HD SCR M5-0.8 X 16
231	SPINDLE CENTER MT3
232	3-JAW CHUCK D=125MM
233	EXT RETAINING RING 6MM
234	PHLP HD SCR M5-.8 X 12
235	PHLP SCR M10-1.5 X 25
236	PHLP HD SCR M5-.8 X 10
237	SUPPORT
238	LIMIT BLOCK
239	CHUCK GUARD
240	FIXING SUPPORT
241	SMALL SHAFT
242	COMPRESS SPRING
243	FLAT WASHER 6MM
244	HEX NUT M6-1.0
245	PLATE FOR SWITCHES
246	FLAT WASHER 10MM
247	PHLP HD SCR M5-.8 X 8
248	MICROSWITCH
249	3-JAW CHUCK FLANGE
250	HEX BOLT M8-1.25 X 30
251	PLUG BOLT
252	HEX NUT M10-1.5



PART NO.	DESCRIPTION
301	PHLP SCR M8-1.25 X 30
302	TAILSTOCK T-NUT
303	FLAT WASHER 12MM
304	HEX NUT M12-1.75
305	TAILSTOCK BODY
306	BEARING 51101
307	TAILSTOCK LEADSCREW
308	TAILSTOCK SLEEVE
309	TUBULAR CLAMP
310	FLAT WASHER 8MM
311	CLAMP BOLT
312	HANDLE
313	OIL CUP
314	T-TAPY FLAT KEY
315	PHLP HD SCR M6-1 X 16
316	PHLP HD SCR M5-.8 X 20
317	TAILSTOCK END COVER
318	CYLINDER PIN 4*30
319	SPRING BOW
320	HAND WHEEL
321	HANDLE BOLT
322	HANDLE SLEEVE
323	INDEX RING
324	SQ HD BOLT M12 X 100
325	TAILSTOCKCLAMP PLATE
326	BASE
327	ZERO POSITION LABEL
328	LABEL RIVET
329	INDICATE LABEL
330	TAILSTOCK CENTER MT2

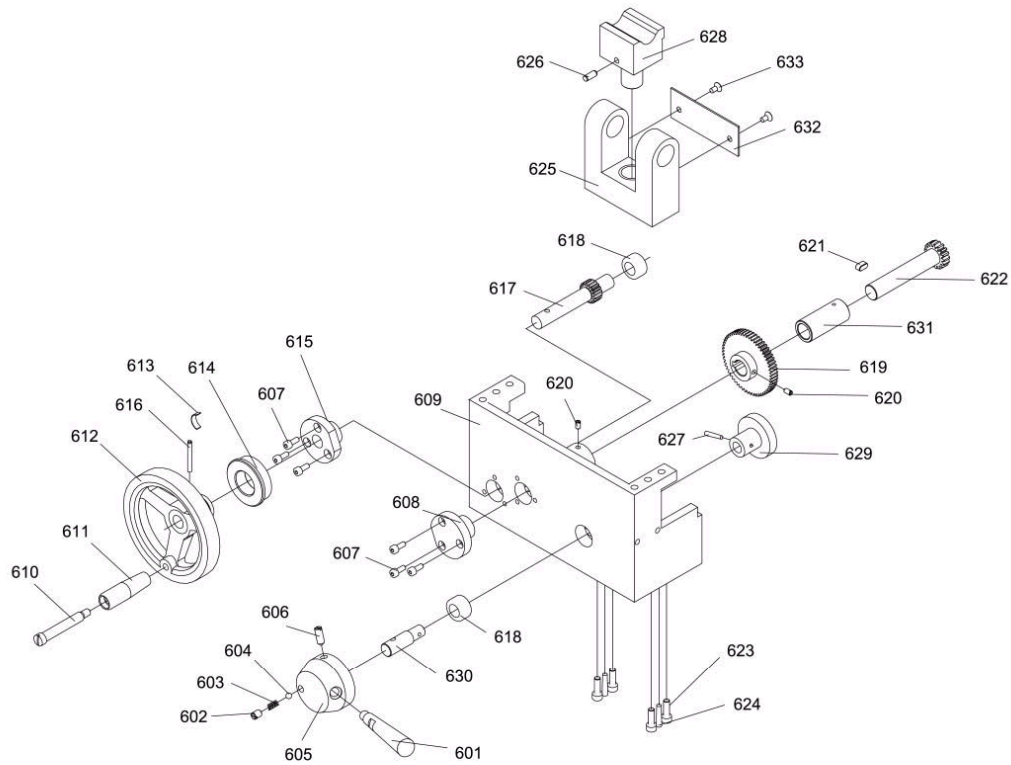


PART NO.	DESCRIPTION
401	CUTTER REST BASE
402	CLAMP DISC
403	HEX BOLT M8-1.25 X 20
404	CUTTER REST DISC
405	CUTTER REST BOLT
406	HEX NUT M4-0.7
407	PHLP HD SCR M4-.7 X 20
408	PHLP HD SCR M4-.7 X 12
409	OIL CUP 10
410	FIXING PIN
411	SQUARE CUTTER REST
412	PHLP SCR M8-1.25 X 30
413	HANDLE
414	HANDLE BASE
415	HANDLE SPACER
416	SPRING 0.5 X 3.5 X 17
417	CUTTER REST CARRIAGE
418	PAD IRON GIB
419	CYLINDER PIN 3 X 10
420	CARRIAGE LEAD SCREW
421	KEY 3 X 3 X 10
422	OIL CUP 6
423	LEADSCREW SUPPORT
424	PHLP HD SCR M5-0.8 X 16
425	SPRING PLATE
426	HANDLE
427	HEX NUT M8-1.25
428	FLAT WASHER 8MM
429	CARRIAGE HANDWHEEL
430	INDEX RING
431	PHLP HD SCR M6-1 X 16
432	CYLINDER PIN 4 X 16

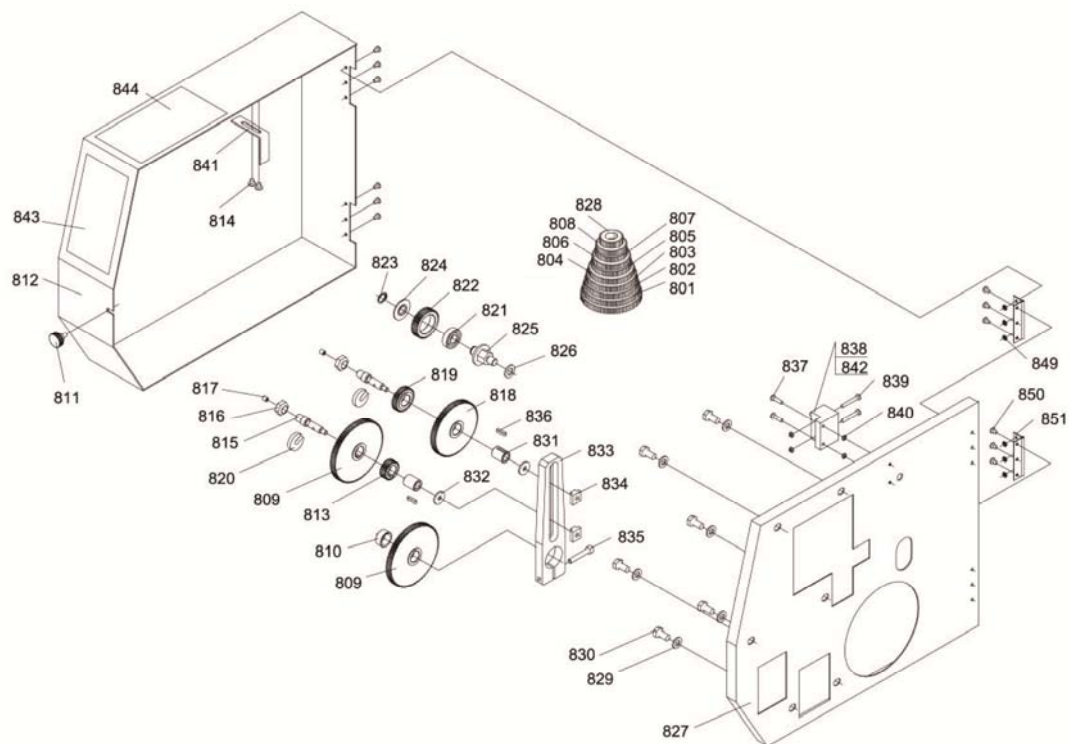


PART NO.	DESCRIPTION
501	HAND WHEEL
502	OIL CUP 6
503	KEY 4 X 4 X 12
504	ROUND NUT
505	PHLP HD SCR M3-.5 X 6
506	OIL-STOPPING FELT
507	PHLP HD SCR M6-1.0 X 35
508	SADDLE LEADSCREW
509	SADDLE
510	PHLP HD SCR M4-.7 X 12
511	CLEARANCE NUT
512	PHLP HD SCR M3-.5 X 12
513	HEX NUT M5-0.8
514	PHLP HD SCR M5-.8 X 26
515	PAD IRON GIB
516	CROSS SLIDE
517	PHLP HD SCR M5-.8 X 10
518	CROSS SLIDE SPACER
519	PHLP SCR M8-1.25 X 10
520	GIB STRIP

PART NO.	DESCRIPTION
521	REAR-CLAMP PLATE
522	PHLP HD SCR M4-.7 X 16
523	PHLP HD SCR M5-.8 X 16
524	HEX NUT M4-0.7
525	PHLP SCR M8-1.25 X 20
526	PHLP HD SCR M5-.8 X 20
527	OIL-STOPPING FELT
528	PROTECTING PANEL
529	PROTECTING PANEL
530	FRONT-CLAMP PLATE
531	BRAKING PLATE
532	LEADSCREW SUPPORT
533	FLAT WASHER 6MM
534	HANDLE BOLT
535	HEX BOLT M6-1 X 20
536	HANDLE SLEEVE
537	BEARING 8101
538	SPRING PLATE
539	INDEX RING
542	ROLL PIN 6 X 45



PART NO.	DESCRIPTION
601	HANDLE
602	PHLP HD SCR M6-1 X 8
603	COMPRESS SPRING
604	STEEL BALL 5
605	HANDLE SEAT
606	PHLP HD SCR M6-1 X 16
607	PHLP HD SCR M4-.7 X 10
608	SHAFT SLEEVE
609	APRON BODY
610	HANDLE BOLT
611	HANDLE SLEEVE
612	HAND WHEEL
613	SPRING PLATE
614	INDEX RING
615	SMALL SHAFT SLEEVE
616	SPRING PIN 4 X 30
617	SMALL GEAR SHAFT
618	SHAFT SLEEVE
619	GEAR
620	PHLP HD SCR M4-.7 X 8
621	KEY 5 X 5 X 10
622	GEAR SHAFT
623	PHLP HD SCR M5-.8 X 16
624	ROLL PIN 4 X 22
625	HALF NUT BASE
626	ROLL PIN 5 X 12
627	ROLL PIN 3 X 20
628	HALF NUT
629	SLOTTED DISC
630	ROTATING SHAFT
631	SHAFT SLEEVE
632	MOVING PLATE
633	PHLP HD SCR M4-.7 X 8

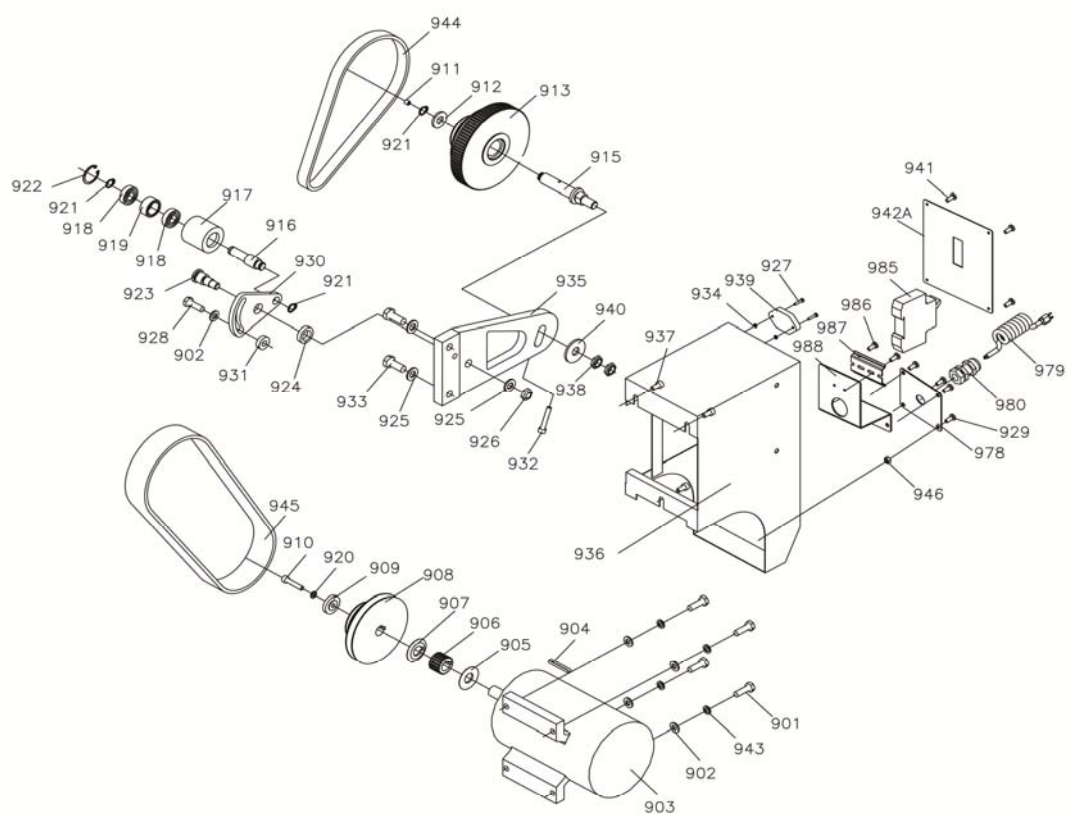


PART NO. DESCRIPTION

801	GEAR Z:72
802	GEAR Z:70
803	GEAR Z:68
804	GEAR Z:66
805	GEAR Z:60
806	GEAR Z:50
807	GEAR Z:48
808	GEAR Z:45
809	GEAR Z:90
810	WASHER
811	KNURLING BOLT
812	GEAR BOX COVER
813	GEAR Z:30
814	SCREW M5 X16
815	BOLT
816	NUT M12
817	OIL CUP 6
818	GEAR Z:80
819	GEAR Z:35
820	OPEN WASHER
821	BEARING 6001
822	INTERMEDIATE GEAR Z:40
823	CHECK RING 12
824	WASHER

PART NO. DESCRIPTION

825	FIXED SHAFT BOLT
826	WASHER
827	GEAR BOX SUPPORT PLATE
828	GEAR Z:40
829	WASHER 8
830	BOLT M6 X16
831	SLIDING BEARING
832	WASHER
833	GEAR REST
834	SQUARE NUT
835	SCREW M6 X 35
836	KEY 4 X16
837	SCREW M4 X16
838	MICRO SWITCH
839	SCREW M4 X 30
840	NUT M4
841	LIMITED PLATE
842	MICRO SWITCH'S BOX
843	MAIN LABEL
844	CHANGING GEAR LABEL
849	HEX NUT M4-7
850	PHILIP HD SCR M6-1.0 X 4
851	HINGE
809A	GEAR Z:100



PART NO.	DESCRIPTION
901	GB5781-86
902	GB97. 1-85
903	YL7144
904	GB1096-79
905	C5C151602
906	C5C151603
907	C5C151601
908	C5C1512
909	C5C1511
910	GB70-85
911	JB/T7940. 4-95
912	C5C1520
913	C5C1515
915	C61514
916	C5C1508
917	C5C1506
918	GB/T276-94
919	C5C1507
920	GB93-87
921	GB894. 1-86
922	GB893. 1-86
923	C61512
924	C61513
925	GB97. 1-85
926	GB6170-86
927	GB818-85
928	GB5781-86

PART NO.	DESCRIPTION
929	GB818-85
930	C5C1518
931	C61511
932	GB70-85
933	GB5781-86
934	GB6170-86
935	C61515
936	C5C151600
937	GB70-85
938	GB6172-86
939	R302
940	GB96-85
941	GB818-85
942	C61517C
943	GB93-87
944	TIMING BELT T5*124*15
945	V-BELT 0-737
946	GB6170-86
978	C80912
979	CABLE
980	M16
981	C61519
982	S4-6
985	NB1-63
986	GB819 M4x8
987	C80906
988	C6151606



WARRANTY

CRAFTEX 3 YEARS LIMITED WARRANTY

Craftex warrants every product to be free from defects in materials and agrees to correct such defects where applicable. This warranty covers **three years** for parts and 90 days for labour (unless specified otherwise), to the original purchaser from the date of purchase but does not apply to malfunctions arising directly or indirectly from misuse, abuse, improper installation or assembly, negligence, accidents, repairs or alterations or lack of maintenance.

Proof of purchase is necessary.

All warranty claims are subject to inspection of such products or part thereof and Craftex reserves the right to inspect any returned item before a refund or replacement may be issued.

This warranty shall not apply to consumable products such as blades, bits, belts, cutters, chisels, punches etceteras.

Craftex shall in no event be liable for injuries, accidental or otherwise, death to persons or damage to property or for incidental contingent, special or consequential damages arising from the use of our products.

RETURNS, REPAIRS AND REPLACEMENTS

To return, repair, or replace a Craftex product, you must visit the appropriate Busy Bee Tools showroom or call 1-800-461-BUSY. Craftex is a brand of equipment that is exclusive to Busy Bee Tools.

For replacement parts directly from Busy Bee Tools, for this machine, please call 1-800-461-BUSY (2879), and have your credit card and part number handy.

- All returned merchandise will be subject to a minimum charge of 15% for re-stocking and handling with the following qualifications.
- Returns must be pre-authorized by us in writing.
- We do not accept *collect* shipments.
- Items returned for warranty purposes must be insured and shipped pre-paid to the nearest warehouse
- Returns must be accompanied with a copy of your original invoice as proof of purchase. Returns must be in an un-used condition and shipped in their original packaging a letter explaining your reason for the return. Incurred shipping and handling charges are not refundable.
- Busy Bee will repair or replace the item at our discretion and subject to our inspection.
- Repaired or replaced items will be returned to you pre-paid by our choice of carriers.
- Busy Bee reserves the right to refuse reimbursement or repairs or replacement if a third party without our prior authorization has carried out repairs to the item.
- Repairs made by Busy Bee are warranted for 30 days on parts and labour.
- Any unforeseen repair charges will be reported to you for acceptance prior to making the repairs.
- The Busy Bee Parts & Service Departments are fully equipped to do repairs on all products purchased from us with the exception of some products that require the return to their authorized repair depots. A Busy Bee representative will provide you with the necessary information to have this done.
- For faster service it is advisable to contact the nearest Busy Bee location for parts availability prior to bringing your product in for repairs.