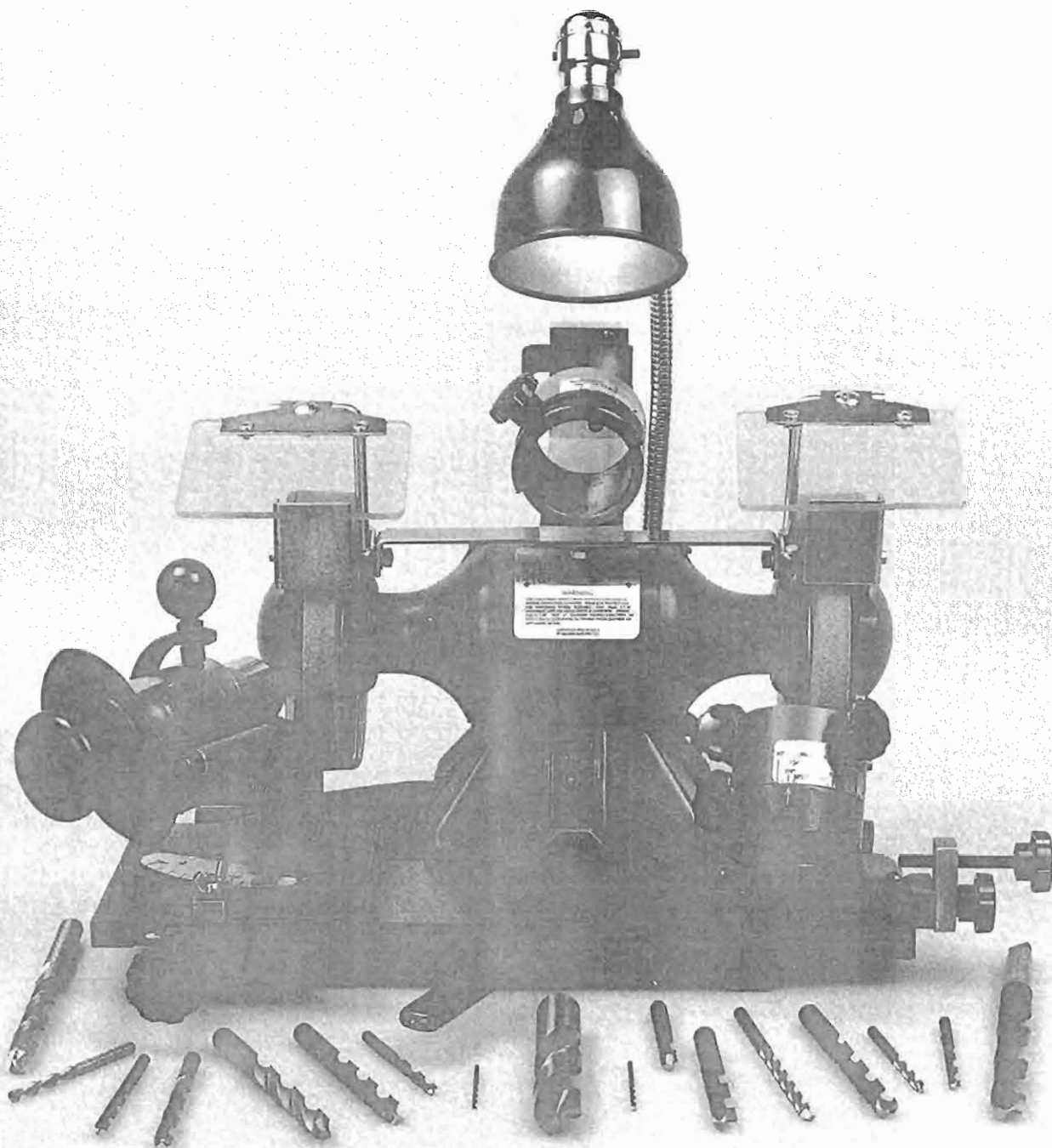




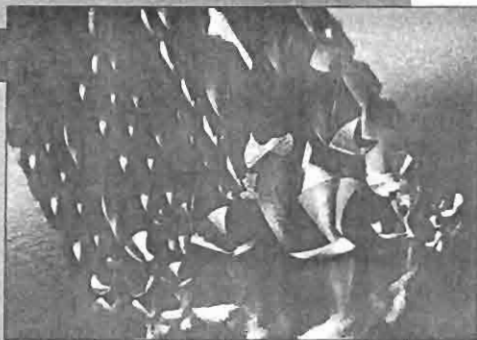
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DRILL GRINDER



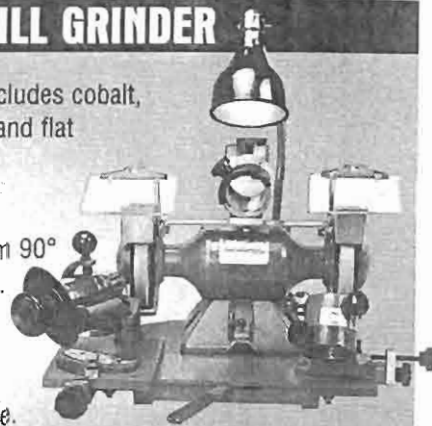
Setup and operating instructions





LISLE 92000 DRILL GRINDER

- **Sharpens drill bits from 1/8" to 1".** This includes cobalt, high speed steel, straight or tapered shank and flat bottom drills.
- **Accurate.** Sharpened drills work like new.
- **Versatile.** Adjusts to grind point angles from 90° to 180°. Grinds lip clearance from 5° to 15°.
- **Fast.**
- **Point Splitting & Web Thinning.**
- **Bench Mountable.** For a sturdy work surface.
- **Sealed Motor.** Keeps free from dirt, grime and shavings for a long life.
- **Everything Included.** No accessories are needed to begin sharpening drills immediately.



SETUP INSTRUCTIONS

The Lisle 92000 Drill Grinder is assembled at the factory to such an extent that it takes only minutes to setup and be ready to operate. However, it pays to read the setup and operating instructions on a step-by-step basis prior to starting. This will help assure success on the first try and will also make the setup easier. Reading the Fundamentals of Drill Sharpening will also familiarize you with terminology used in the instructions.

SETUP INSTRUCTIONS

1. Place drill grinder on your workbench. Position both safety shields above the grinding wheels.
2. Attach the horizontal stop bracket and horizontal stop screw to the right side of the base. Use the short thumbscrew to attach the bracket to the base. The longer stop screw should be in the upward position. (Figure A)
3. Attach feed screw to the left side of the base. (Figure A)



Figure A

DRESS THE LEFT GRINDING WHEEL

This only needs to be done when you first use the machine and then as necessary.



Figure D

1. Loosen the wing nut on the sharpening assembly plate. Then, set the sharpening assembly plate to 160° index. Tighten wing nut. (Figure B)
2. Insert diamond dresser into collet. The tip of the diamond should protrude approximately 1". Tighten collet. (Figure C)
3. Slide the base plate handle to the far right position. Insert collet into the sharpening fixture. Make sure the high ends of the collet cam are in the up-and-down position. (Figure D)
4. Move the base plate handle to position the diamond dresser in front of the approximate center of the grinding wheel. Advance the feed screw until the diamond is close, but not touching, the grinding wheel. (Figure E)



Figure B

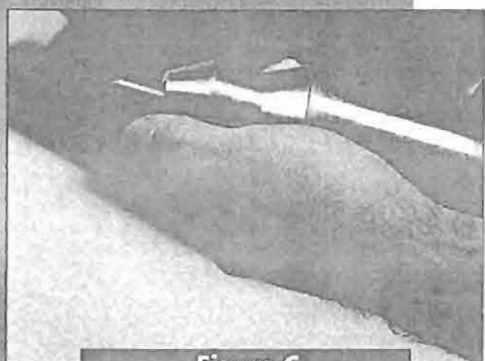


Figure C



Figure E

SETUP INSTRUCTIONS

5. Position the diamond dresser past the right side of the wheel by shifting the base plate.
6. Turn on motor. Advance the feed screw approximately 1/16 of a turn clockwise. Slowly shift the base plate handle to the left to pass the diamond dresser over the wheel. If you don't contact the wheel the first time, shift the diamond dresser past the wheel to the right and advance the feed screw again.
7. After initial contact with the wheel, move the diamond dresser from right to left across the entire wheel surface. **Note:** After the diamond dresser is advanced, always dress from right to left, never from left to right. Dressing the wheel from left to right may gouge the wheel or dislodge the diamond.
8. Repeat the dressing operation until the stone is dressed uniformly. Turn off the motor.

DRESS THE RIGHT GRINDING WHEEL (FOR POINT SPLITTING AND WEB THINNING)

This only needs to be done when you first use the machine and then as necessary.

1. Insert dresser diamond into diamond dresser holder. The diamond should protrude approximately 1/2". Tighten with set screw. (Figure F)
2. With motor turned off, insert collet into the split point collet tube. Turn collet clockwise until the notch engages the slot as shown. (Figure G) Tighten upper collet lock screw.
3. Insert diamond dresser into the collet with the diamond facing the wheel. The diamond should be angled slightly to the right of perpendicular to the face of the wheel. Tighten collet. (Figure H and Diagram H)
4. Move the base plate handle to position the diamond dresser in front of the approximate center of the grinding wheel. Tilt and hold the collet forward and position the split point stop screw so the diamond dresser is close but does not contact the grinding wheel. (Figure J)
5. Position the dresser diamond past the right side of the wheel. (Figure K) Turn on motor.
6. Turn split point stop screw counter-clockwise approximately 1/16 of a turn. Move base plate handle slowly to the left to contact the grinding wheel. Slowly pass the diamond across the wheel to dress the wheel. If the diamond does not contact the stone, position the diamond again on the far right side. Advance the diamond dresser 1/16 of a turn and repeat above until the wheel is dressed. **Note:** After the diamond dresser is advanced, always dress from right to left, never from left to right. Dressing the wheel from left to right may gouge the wheel or dislodge the diamond.
7. Repeat the dressing operation until the stone is dressed uniformly. Turn off motor.

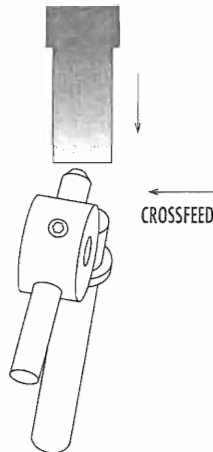


Diagram H



Figure F



Figure G



Figure H



Figure J



Figure K

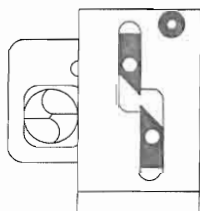
OPERATING INSTRUCTIONS

To SET THE DESIRED POINT ANGLE

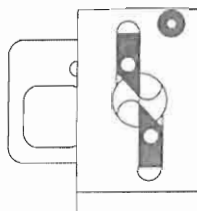
1. Set the point angle gauges on drill index tube and the sharpening fixture to the desired angle. Most general-purpose drills have a 118° point angle. (Figures 1 and 2)

To SET THE CLEARANCE ANGLE

1. Set the drill in the drill diameter gauge. Slide the moveable plate to contact the drill cutting lips. (Figure 3 & Diagram 6) This is the widest part of the drill.
2. Place drill in collet. Use the longer collet nose for drills $5/8"$ and smaller. Use the shorter collet nose for drills larger than $5/8"$. Do not tighten collet on the drill at this time.
3. Insert the collet all the way into the drill index tube. Turn the collet clockwise until the nylon notch fits into the index tube slot. (Figure 4)
4. Slide the drill forward until it contacts the back of the drill plate. You may need to rotate the drill to do this. (Figure 5)
5. With the drill against the drill plate, turn the drill clockwise until the cutting lips contact the two stop locks. (Diagram 6) Tighten collet on drill.
6. Turn the feed screw counter-clockwise until the sharpening fixture is in the full back position. (Figure 7)



Setting Drill Diameter Gauge



Setting Drill Rotation

Diagram 6

7. Remove the collet from the index tube and place it into the sharpening fixture. Make sure the high ends of the collet cam are in the up and down position. (Figure 8)

⚠ WARNING:

Warning: Read Operating & Safety Instructions before use.

Warning: For your own safety, read instruction manual before operating grinder. Wear eye protection. Use grinding wheel suitable for 3800 R.P.M. Maximum safe no load speed is 3600 R.P.M. Arbor size is $1/2"$ for 6" grinder. Proper direction of rotation is clockwise as viewed from outside of left-hand wheel.

Warning: Improper use may cause grinding wheel breakage and serious injury. Comply with ANSI B7.1 OSHA and Safety Guide furnished with this package. Don't overspeed, abuse or drop wheel. Always use a guard, personal protective equipment and proper mounting procedures.

Warning: Motor must be grounded in accordance with the National Electric Code and Local Codes, by trained personnel to prevent serious electrical shocks.

To service motor, disconnect power source from motor and any accessory devices and allow motor to come to a complete stand still.

Warning: Before use, make sure eye shields are mounted above grinding wheel guards and adjusted properly.

Warning: Before mounting a grinding wheel, ring test the wheel to check for defects.

Warning: Wear eye protection and keep guards in place.



Figure 1



Figure 2

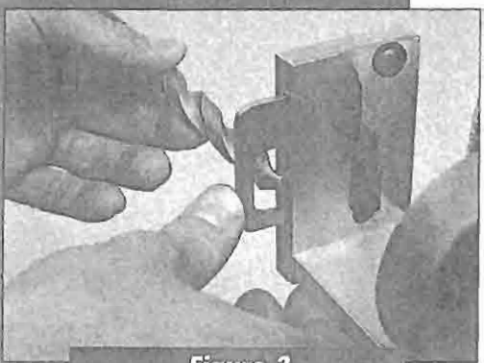


Figure 3

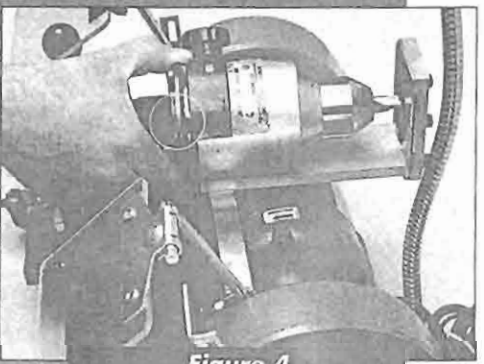


Figure 4



Figure 5

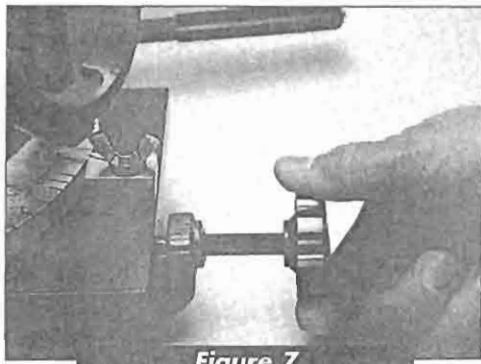


Figure 7

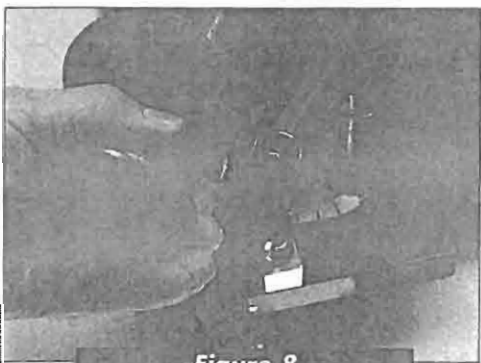


Figure 8

OPERATING INSTRUCTIONS

To SHARPEN DRILL

1. First, turn on motor. Turn the feed screw clockwise to advance the tip of the drill until it is close to the grinding wheel. (Figure 9) Rotate the collet clockwise while slowly advancing the feed screw. When the drill contacts the grinding wheel, continue to advance the feed screw approximately 1/16 of a turn for drills larger than 5/8". On drills 5/8" or less, advance 1/8 of a turn. At the same time, rotate the collet clockwise a full 360°. Continue until both lips of the drill are sharpened. Turn off motor.

Note: The lip clearance adjustment is preset for standard drills. If you would like to adjust the lip clearance return to page 3, Step 1 of the Operating Instructions under To Set the Desired Point Angle. Adjust the drill index tube only. Position the arrow to the left to increase clearance or move to the right to decrease clearance. (Figure 10)

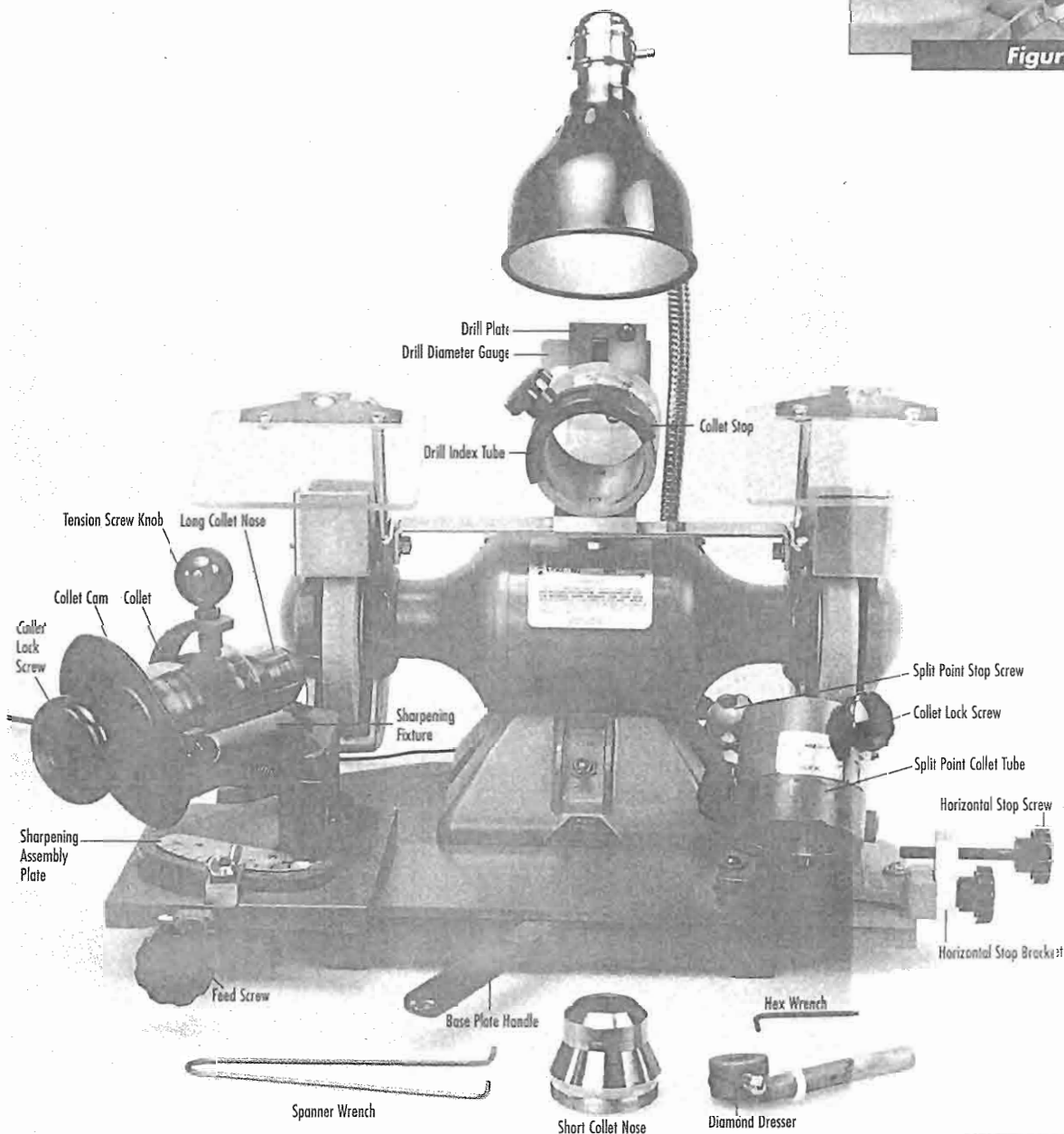
Note: If you plan to Point Split or Web Thin, keep the drill in the collet.



Figure 9



Figure 10



POINT SPLITTING

WHY POINT SPLIT?

A drill with a split point has little chisel edge and is self centering, which is important for CNC machines. It also reduces thrust, horsepower and torque. Many times no drill bushings or pilot holes are required.

- A split point drill after use and sharpening will need the split point reconditioned to restore the drill to its original condition.
- A split point can be added to a conventional drill for enhanced performance.

Instructions

1. Sharpen the drill bit as described. Do not remove the drill from the collet after sharpening. Make sure the motor is turned off.
2. Reverse the position of the horizontal stop bracket so the longer horizontal stop screw is now in the downward position. (Figure SP0)
3. Set the split point collet tube to the desired drill point angle. (Figure SP1) Be sure to read the correct scale. Split point scale is on the bottom (black).
4. Insert the collet with the drill into the split point collet tube. Engage the nylon notch into the groove. Tighten the collet lock screw. (Figure SP2)
5. Pivot collet forward until the drill almost contacts the grinding wheel. Set split point stop screw. (Figure SP3)
6. Position center of drill to the right edge of the grinding wheel by shifting the base plate handle. The point of the drill should be centered over the right edge of the grinding wheel. (Illustration SP4) The horizontal end stop can also be used to fine-tune this adjustment. Set the horizontal end stop. (Figure SP5)
7. Turn on the motor. Pivot collet toward the grinding wheel until the collet hits the end stop. Loosen the split point stop screw counter-clockwise in increments of 1/16 of a turn until the drill contacts the grinding wheel. (Figure SP6)
8. Lightly grind the drill tip until the grinding wheel just begins to grind the web. (Illustration SP7)
9. To grind the second lip, let the collet pivot backwards, then loosen the collet lock screw and rotate the collet 180°. Be sure to engage the nylon notch into the groove. Tighten the collet lock screw and grind the second edge until the split point collet tube contacts the end stop. Repeat grind on both lips if necessary until the desired split point is achieved. Refer to Illustration SP7 for a proper split point grind.
10. In time the right edge of the right wheel will also need dressing. See page 7, To Dress Right Edge of Grinding Wheel under Tips for Better Drill Sharpening.

Note: The secondary cutting edges must not meet at the center of the drill. Separation between the two cutting edges at the center should be from about .003" to .010".

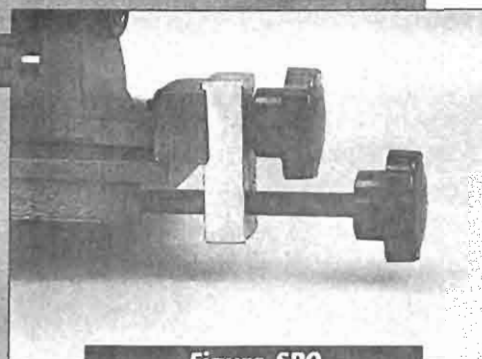


Figure SP0



Figure SP1



Figure SP2



Figure SP3

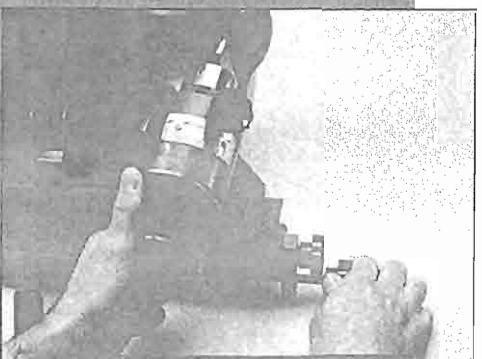


Figure SP5

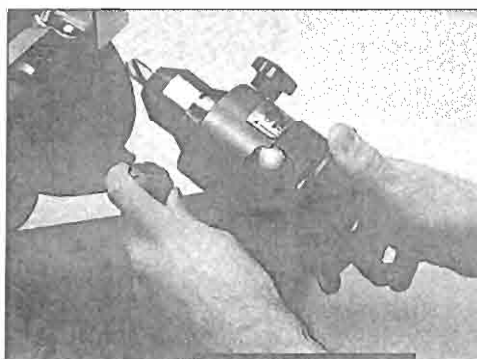


Figure SP6

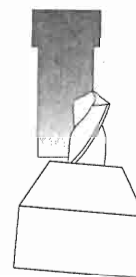


Illustration SP4

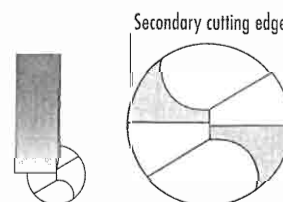


Illustration SP7

WEB THINNING

Why Web Thin?

Most drills are made with webs that increase in thickness towards the shank of the drill. As you use and sharpen the drill, the web becomes wider. Thinning the web will aid in centering, allow increased feed rates, and reduce thrust requirements.

Instructions

1. Sharpen the drill bit as described. Do not remove the drill from the collet after sharpening. Make sure the motor is turned off.
2. Reverse the position of the horizontal stop bracket so the longer horizontal stop screw is now in the downward position. (Figure WT0)
3. Set the split point collet tube to the desired drill point angle. (Figure WT1) Be sure to read the correct scale. Web thin scale is on the top (red).
4. Insert the collet with the drill into the split point collet tube. Engage the nylon notch into the groove. Tighten the collet lock screw. (Figure WT2)
5. Pivot collet forward until the drill almost contacts the grinding wheel. Set split point stop screw. (Figure WT3)
6. Position center of drill to the right edge of the grinding wheel by shifting the base plate handle. The point of the drill should be centered over the right edge of the grinding wheel. (Illustration WT4) The horizontal end stop can also be used to fine-tune this adjustment. Set the horizontal end stop. (Figure WT5)
7. Turn on the motor. Pivot collet toward the grinding wheel until the collet hits the end stop. Loosen the split point stop screw counter-clockwise in increments of 1/16 of a turn until the drill contacts the grinding wheel. (Figure WT6)
8. Lightly grind the drill tip until the grinding wheel just begins to grind the web. (Illustration WT7)
9. To grind the second lip, let the collet pivot backwards, then loosen the collet lock screw and rotate the collet 180°. Be sure to engage the nylon notch into the groove. Tighten the collet lock screw and grind the second edge until the split point collet tube contacts the end stop. Repeat grind on both lips if necessary until the desired web thinning is achieved. A rule of thumb on how much web should remain is 10% to 20% of the drill diameter. Refer to Illustration WT7 for a proper web thinning grind.
10. In time the right edge of the right wheel will also need dressing. See page 7, To Dress Right Edge of Grinding Wheel under Tips for Better Drill Sharpening.

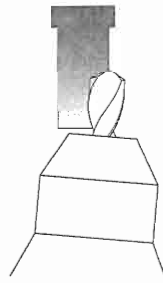


Illustration WT4

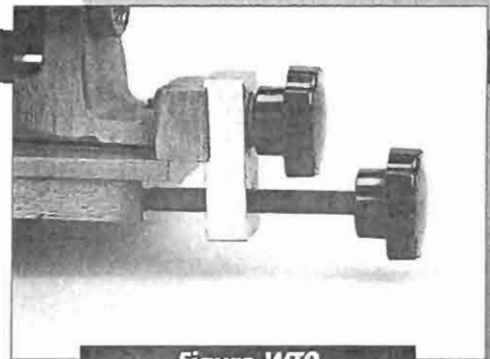


Figure WT0



Figure WT1



Figure WT2



Figure WT3

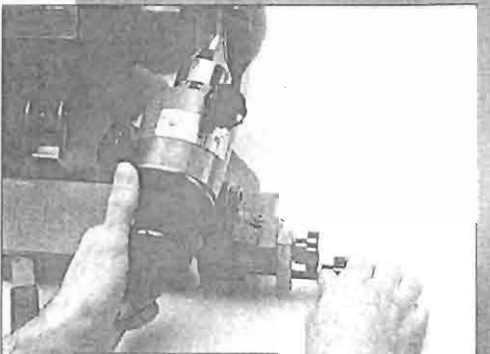


Figure WT5

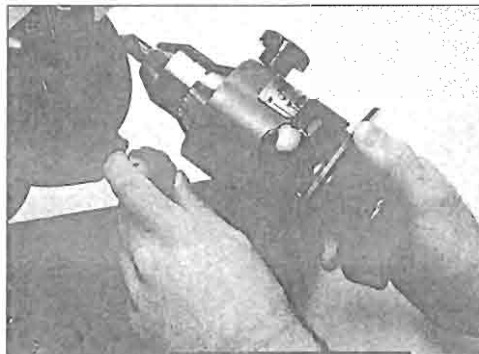


Figure WT6

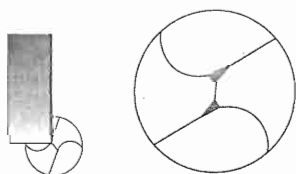


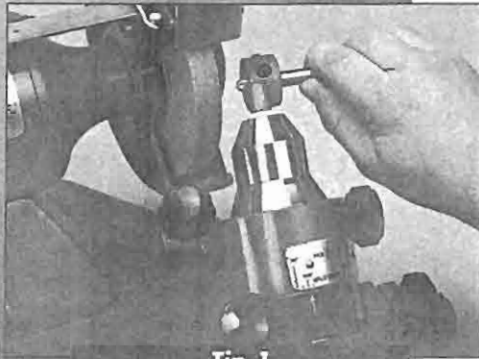
Figure WT7

TIPS FOR BETTER DRILL SHARPENING

1. For maximum grinding wheel life when sharpening smaller drills up to 3/8", position drills first so that you are contacting the left half of the grinding wheel. After sharpening several drills, shift sharpening assembly over to the right half of the grinding wheel and continue sharpening drills.
2. Make sure there are no burrs sticking out from shank of drill bit before placing drill into collet.
3. If drill is chipped or has excessive wear at cutting edges, rough grind the drill by hand on bench grinder. Then grind the drill with the Lisle 92000 Drill Grinder.

To Dress Right Edge of Right Grinding Wheel

1. Place collet into split point collet tube. Engage the nylon notch into the groove. Tighten collet lock screw. Insert diamond dresser holder into collet. Place diamond dresser into holder with diamond protruding approximately 1/4". Angle the diamond slightly downward from perpendicular to the wheel. (Tip 1). Tighten collet lock screw.
2. Shift the base plate handle to the right until the diamond is just past the right edge of the wheel.
3. Tilt the split point collet tube forward until the diamond is just past the edge of the wheel. Set horizontal stop screw. Loosen horizontal stop screw 1/8 of a turn. Advance the diamond by moving the base plate handle to the left against the stop. (Tip 2). Continue until the diamond contacts the wheel. Rotate collet back ward and forward to pass the diamond over the wheel. Repeat until the wheel is dressed.



Tip 1



Tip 2

FUNDAMENTALS OF DRILL SHARPENING

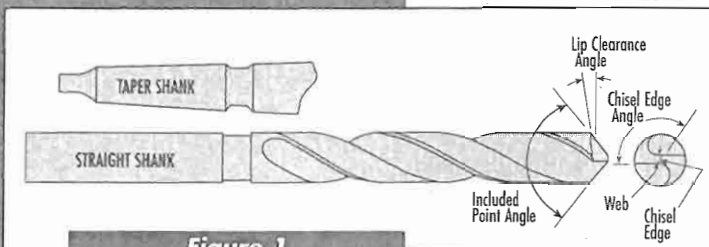


Figure 1

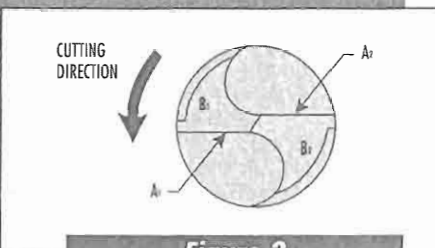
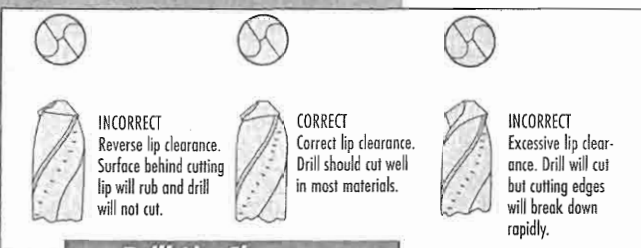


Figure 2

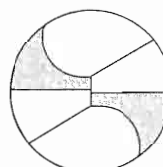
Before sharpening a drill bit, it is important to be familiar with basic drill terminology and the fundamentals of drill sharpening. Figure 1 below shows some of the basic terminology related to a standard twist drill.

A properly sharpened drill is one where the cutting edges (lips) are sharp, are equal length and have adequate clearance behind them. This clearance is referred to as lip clearance.

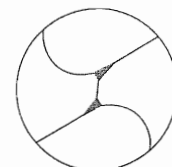
In Figure 2, the two cutting lips are shown as A1 and A2. The surfaces behind the cutting lips are shown as B1 and B2. If the surfaces B1 and B2 are higher than the cutting lips, the cutting lips will not contact the work and the drill will not cut.



Drill Lip Clearance



A Split Point

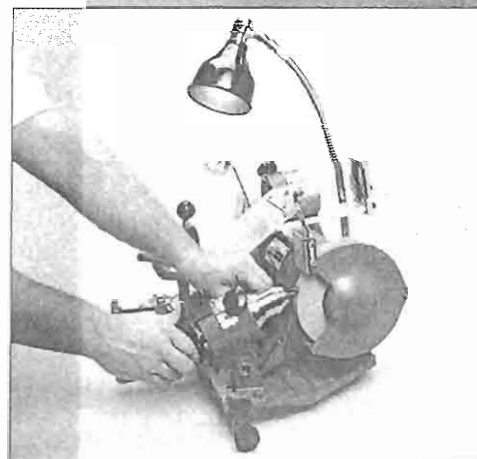


A Thinned Web

LISLE 92000 DRILL GRINDER, DOS AND DON'TS

Lisle

1. Never use petroleum based lubricants (ie: oil, grease, etc.) except on the 7/16" diameter ball bearings on the pivots for the sharpening fixture and the split point collet tubes. Using lubrication anywhere else will attract grit and make the unit wear out faster. We recommend powdered graphite lubricant.
2. Clean out the chuck by blowing compressed air through the back of the knob, so that air exits drill opening. A more thorough cleaning can be accomplished by disassembling the collet. Start by unscrewing the threaded flange with the spanner wrench (Part# 92060). Wipe all surfaces clean with a clean cloth, then reassemble.
3. Never use compressed air to blow grit from the Drill Grinder. We recommend using a soft nylon brush (like a paintbrush) or a vacuum cleaner. Using compressed air forces grit into moving parts. It can also blow grit into your eyes or anyone in the vicinity.
4. The grinding wheels that come on the 92000 Drill Grinder have been balanced to a higher tolerance. Use of other grinding wheels can result in excessive vibration. For optimum performance, order Lisle Part# 92760 when replacing a grinding wheel.
5. The 92000 Drill Grinder works best on a rigid bench. Sometimes, if conditions are right, a steel bench can amplify motor vibrations. In these cases, we recommend placing the Drill Grinder on a piece of plywood or rubber mat (12" x 18") to absorb some of the vibration.
6. When loosening or tightening the nut that holds the grinding wheel, remember the following. The left-hand shaft has a left-hand thread and the right-hand shaft has a right-hand thread.



TROUBLESHOOTING GUIDE

Drill chatters when contacting the grinding wheel.

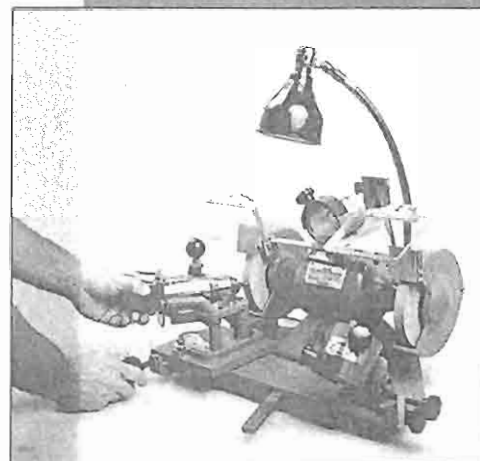
1. Grinding wheel is dull or loaded up. Dress wheel with diamond dresser.
2. Nose is loose on collet. Remove drill from collet and tighten nose. Reinstall drill.
3. Collet fits loosely in sharpening fixture. Move front of collet while in sharpening fixture to see if there is any play up and down. To tighten, loosen jam nut with 9/16" open-end wrench. Turn 1 3/8" diameter round tension screw knob until a .001" feeler gauge has a slight drag between the collet and tension screw. Tighten jam nut and recheck.
4. Loose bearings on sharpening fixture. If bearings are loose, loosen jam nut with 3/4" open-end wrench. Turn adjusting screw with 1/4" Allen wrench to eliminate free play, yet collet holder should pivot freely. Tighten jam nut.

Hole drilled is oversize.

1. Make sure there are no burrs on shank where it is held by the collet.
2. Nose is loose on collet.
3. Check that both nylon rubbing blocks that are mounted on the collet are the same height.
4. Drill is bent. Roll drill on flat surface. If drill is bent, discard it.

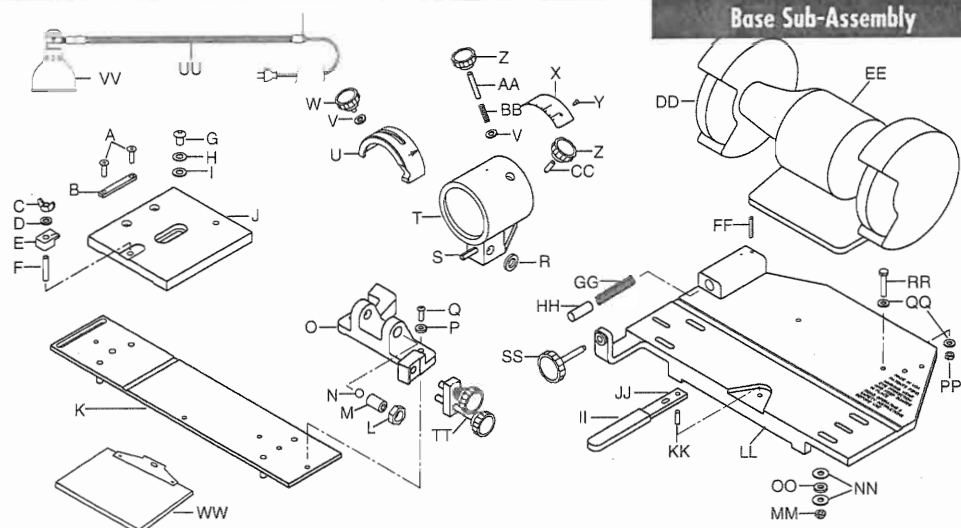
Not enough clearance.

1. For small diameter drills up to 3/16", as the sharpening fixture is fed in, it slightly changes the clearance of the drill bit. If a lot of material is ground off (over 1/2 turn of the feed screw), reset the drill in the sharpening fixture.
2. Cobalt drills, as a rule of thumb, have a much thicker web than conventional drills. Moving the drill diameter gauge on the drill index tube to the left, about the width of the arrow, will increase the clearance.



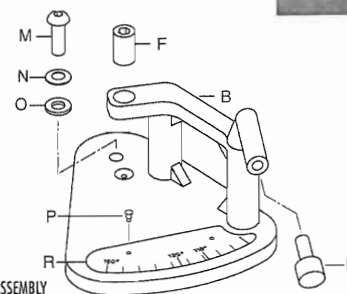
PARTS LIST

15950 Nylon Washer
16530 Hex Jam Nut
16900 Grip
19080 Rivet
22890 Steel Washer
38160 Washer
38200 Washer
42210 1/8" Hex Wrench
44430 Dowel Pin
50060 Spring
50810 Washer
53160 Bolt
60360 Nut
90050 Feed Screw Wear Block
92010 Side Plate Assembly
92030 Feed Knob
92040 Decal
92050 Decal
92060 Spanner Wrench
92070 Groove Pin
92080 Cam
92090 Knob
92110 Cam Follower
92120 Return Spring
92130 Hardened Washer
92140 Jaw (6)
92150 Jaw Holder
92160 Threaded Flange
92170 Threaded Sleeve
92180 Long Nose
92190 Short Nose
92210 Collet Holder & Bracket Assembly
92230 Knob & Stud Assembly
92240 Pivot Base
92260 Base
92270 Felt Washer (2)
92280 Return Spring
92290 Feed Plate
92310 Slide Stop Assembly
92320 Split Point Base
92360 Button Head Screw
92370 Decal
92390 Knob
92400 Split Point Holder
92430 Washer
92440 Spring Pin
92450 Set Screw
92460 Hex Jam Nut (2)
92470 Brass Tipped Set Screw
92480 Adjusting Screw
92500 Motor Assembly
92540 Diamond Dresser Holder
92570 Handle
92610 Cam Follower Bearing
92620 Pusher Pad
92630 Clamp Body
92640 Guide
92660 Diamond Dresser
92670 Flat Head Screw
92680 Urethane Washer
92690 Self Locking Nut
92700 Button Head Bolt
92710 Spring Washer
92720 Spring Washer
92730 Button Head Screw
92740 Set Screw
92750 Wing Nut
92760 Grinding Wheel
92770 Spring Pin
92780 Steel Ball (2)
92790 Adjusting Screw
92810 Support Bar
92820 Frame
92830 Cradle
92840 Sizer
92850 Lip Aligner
92860 Guide
92870 Tube
92880 Collet Stop
92890 Bolt
92900 Bolt
92910 Bolt
92920 Bolt
92930 Bolt
92940 Vinyl Cap
92960 Return Spring
92970 Washer
92980 Socket Head Cap Screw
92990 Knob
93000 Flex Arm Light
93040 Lamp Shade
93050 Eye Shield

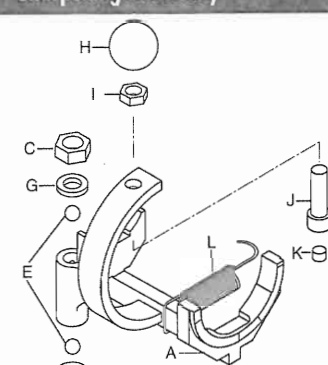


A 92670 FLAT HEAD SCREW	K 92010 SLIDE PLATE ASSEMBLY	U 92880 COLLET STOP	EE 92500 MOTOR ASSEMBLY	OO 92680 URETHANE WASHER
B 92640 GUIDE	L 92460 HEX JAM NUT	V 92890 WASHER	FF 92770 SPRING PIN	PP 60360 NUT
C 92750 WING NUT	M 92480 ADJUSTING SCREW	W 92230 KNOB & STUD ASSEMBLY	GG 92960 RETURN SPRING	QQ 50810 WASHER
D 38200 WASHER	N 92780 STEEL BALL	X 92370 DECAL	HH 92620 PUSHER PAD	RR 53160 BOLT
E 92630 CLAMP BODY	O 92320 SPLIT POINT BASE	Y 19080 RIVET	II 16900 GRIP	SS 92030 FEED KNOB
F 92740 SET SCREW	P 92430 WASHER	Z 92390 KNOB	JJ 92570 HANDLE	TT 92310 SLIDE STOP ASSEMBLY
G 92700 BUTTON HEAD BOLT	Q 92360 BUTTON HEAD BOLT	AA 92450 SET SCREW	KK 44430 DOWEL PIN	UU 93000 FLEX ARM LIGHT
H 92710 SPRING WASHER	R 92270 FELT WASHER	BB 50060 SPRING	LL 92260 BASE	VV 93040 LAMP SHADE
I 38160 WASHER	S 92440 SPRING PIN	CC 92470 BRASS TIPPED SET SCREW	MM 92690 SELF LOCKING NUT	WW 93050 EYE SHIELD
J 92290 FEED PLATE	T 92400 SPLIT POINT HOLDER	DD 92760 GRINDING WHEEL	NN 92970 WASHER	

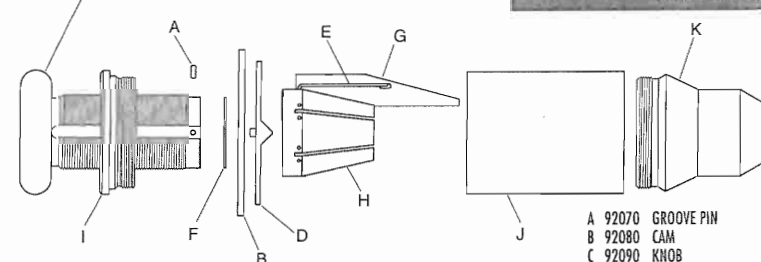
Sharpening Assembly



A 92210 COLLET HOLDER & BRACKET ASSEMBLY	J 92980 SOCKET HEAD CAP SCREW	N 92720 SPRING WASHER
B 92240 PIVOT BASE	K 90050 FEED SCREW WEAR BLOCK	O 38200 WASHER
C 92460 HEX JAM NUT	L 92280 RETURN SPRING	P 19080 RIVET
D 92610 CAM FOLLOWER BEARING	M 92730 BUTTON HEAD SCREW	R 92040 DECAL
E 92780 STEEL BALL		
F 92790 ADJUSTING SCREW		
G 92270 FELT WASHER		
H 92990 KNOB		
I 16530 HEX JAM NUT		



Collet Assembly



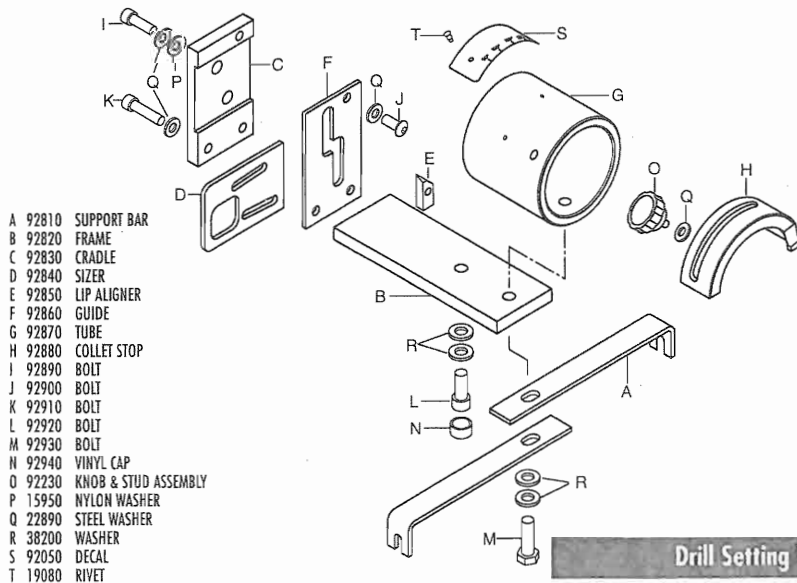
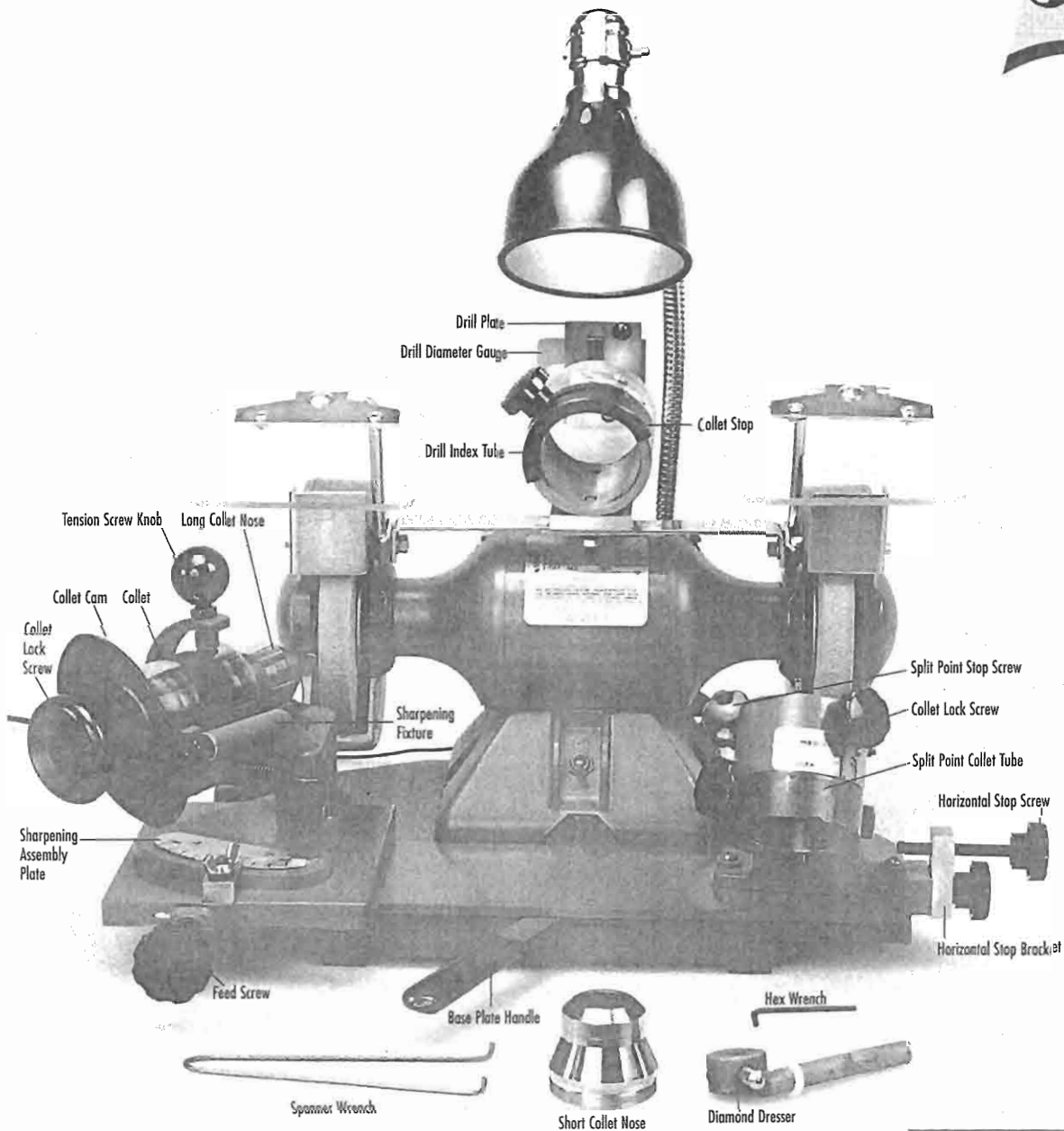
A 92070 GROOVE PIN	G 92140 JAW
B 92080 CAM	H 92150 JAW HOLDER
C 92090 KNOB	I 92160 THREADED FLANGE
D 92110 CAM FOLLOWER	J 92170 THREADED SLEEVE
E 92120 RETURN SPRING	K 92180 LONG NOSE
F 92130 HARDENED WASHER	

Parts Bag Contents

A 92310 SLIDE STOP ASSEMBLY
B 92060 SPANNER WRENCH
C 92030 FEED KNOB
D 92540 DIAMOND DRESSER HOLDER
E 92660 DIAMOND DRESSER
F 92190 SHORT NOSE
G 42210 1/8" HEX WRENCH

DRILL GRINDER PARTS

Lisle



Drill Setting Fixture