

INSTRUCTION MANUAL and PARTS LIST

THE "CHAMP" POINT SPLITTING DRILL AND TOOL GRINDER



PARTS LIST AND THEIR FUNCTION

- P6- 1B. Carriage BED Supports upper drill bed.
 2B. DRILL BED. Slides forward with drill to grinding wheel.
 3B. KNURLED FEED SCREW. Controls forward drill bed travel to grind drill point.
 4. THREAD TENSION BAR. Increases or decreases thread tension of the feed screw.
 5. PLASTIC WASHER. Increase thread tension range (MUST be kept clean).
 6. DRILL BACK STOP LOCK ASSEMBLY. Adjusts to different drill lengths.
 6A. "T" Bar Screw. (On 1/2" HP model only, this part is 6TS.)
 6B. Bridge.
 6C. Cube.
 7. LIP CLEARANCE SCALE.
 8. LIP CLEARANCE LOCKING SCREW.
 9. TOOL POST. Lower part has ring scale for drill point angles.
 9B. Drill point angle locking screw.
 9VSS. VERTICAL SHIFT STOP. Prevents heavy drills from shifting 1 B downward and also used to obtain precise angles with angle gauge blocks when using TOOL TABLE.
 10. OSCILLATING MECHANISM. Sweeps drill back and forth across wheel rim's FULL width.
 10C. Boot.
 10D. Grease Fitting. (Grease at least once monthly, more often for heavier usage.)
 10-1 Swing Casting.
 10-2. Locking Disc.
 10-3. Locking Screw.
 10-4. Locking Lever. Locks oscillating mechanism for sharpening small drills and certain tool table operations.
 10-5. Swing Control Rod. Permits positioning of split pointing or drill sharpening mechanism in proximity to the wheel for tool grinding.
 10-6. Rod Locking Screw.
 10-7. Secures Oscillating Mechanism.
 10-8. Oscillating Shaft Guide.
 10-9. Feed Knob. Transports tool grinding mechanism towards or away from the grinding wheel.
 10-10. 1/4" Set Screw (4) retains ball bearings. Excessively tightened screws make it difficult to turn the feed knob.
 10-11. Oscillating Shaft.
 10-12. Shaft Locking Screw.
 10-13. Shaft Locking Lever. Used to lock Shaft and Feed Knob.
 11. Feed Screw Assembly. Controls depth of notch when splitting points, web: thinning, and etc.
 11-A. Thread Tension Nut. Increases or decreases feed screw thread tension.
 11-B. Plastic Washer. Increases thread tension range (MUST be kept clean).
 11-C. Strike Plate. The amount of clearance between the Strike Plate and Feed Screw TIP determines the amount of metal removal from the drills.
 12. GOOSE NECK.
 12A. Light Shade.
 12-SP. POWER SWITCH. 12-SP Is for single phase and 12-3P is for 3 phase motors.
 13. DRILL INDEXING GAUGE. (Establishes correct relationship of drill to the wheel.)
 14. MOTOR BASE CASTING.
 14A. REAR SUPPORT LEG. (behind 14, not shown)
 14B. WHEEL COVER.
 14C. SLOTS. For dressing wheel's face and rim.
 P7- 15. WHEEL ADAPTOR. Accepts grinding wheel.
 15A. Socket head set screws.
 16. WHEEL RETAINING FLANGE.
 17. WHEEL SPACER. For use with diamond or borazon wheels. (Special order item.)
 P6- 18. GRINDING WHEEL. 18-60 is 60 grit, 18-46 is 46 grit and 18-36 is 36 grit.
 P4- 19. DIAMOND DRESSER ASSEMBLY.
 19A. Diamond Holder. Slides across slotted holes in wheel cover.
 19B. Thread Tension Bar, Provides thread tension to hold feed screw adjustments.
 19C. Plastic Washer. Increases thread tension range (MUST be kept clean).
 19D. Diamond Mounted Screw.
 P2- 19-SPW This is a special wheel that MUST be used for point splitting and dubbed drills.
 19-SW SPANNER WRENCH. For the grinding wheels.
 19-PSB This is a special bed that's supplied with the "CHAMP" point splitting machine for point splitting and drill dubbing.
 P3- 20. ANGULAR TOOL TABLE. 20A. Fence 20B, Fence locking screw.
 P5- 21. SPADE AND TRACK BIT SHARPENER. 21-1, Carriage bed. 21-2 Drill bed, 21-3A, Feed screw. 21-4, Thread tension bar.
 21-5, Plastic washer. 21-6A, "T" bar screw 21-6B, Bridge, 21-6C Cube.
 P1- 21-7 Track bit shim. MUST be used for track bits).

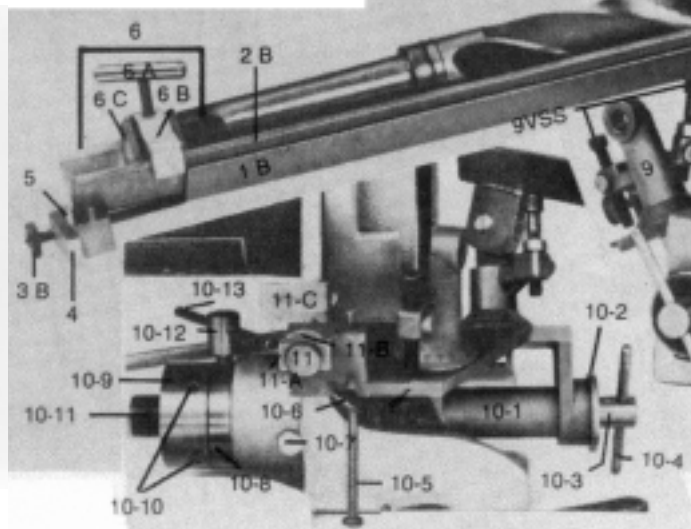
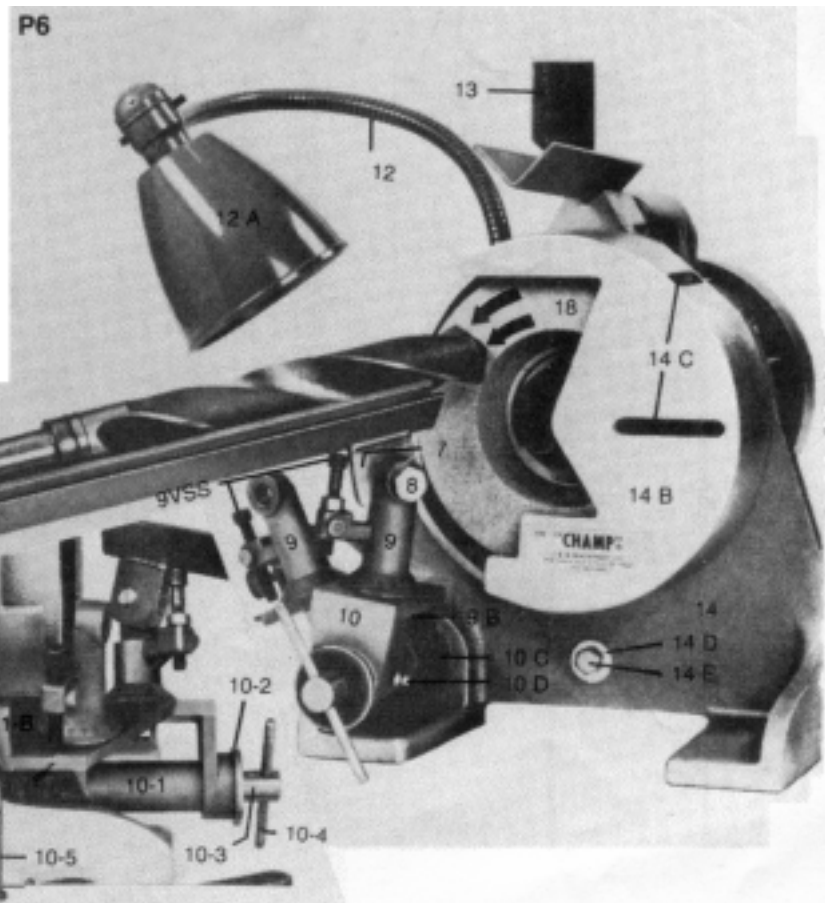
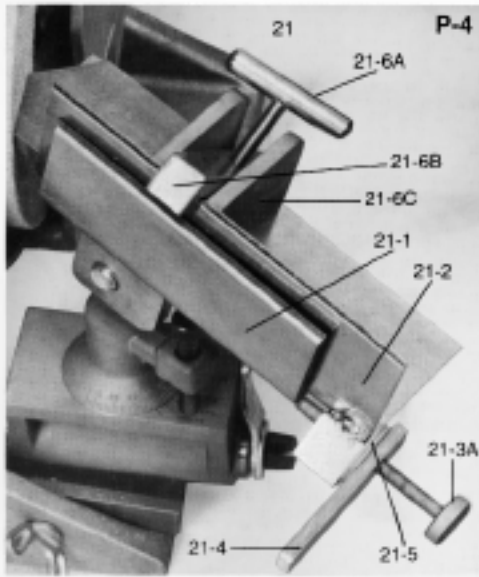
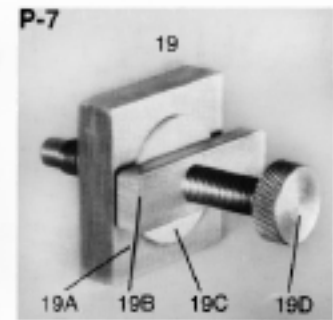
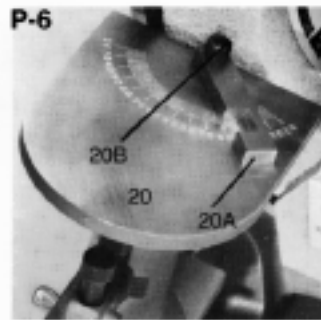
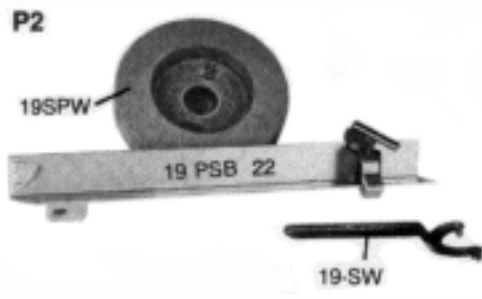
Specify part No. or item's name when ordering replacements. NOTE: All parts are interchangeable with all models with the exceptions as follows:
 For drill grinding beds that accept drills up to 7" long, part No. for carriage bed is 1-A. Drill bed Is 2-A. Feed screw Is 3-A. "T" bar screw is 6-TS.
 For drill grinding beds that accept drills up to 17" long, Nos. are as listed in P-1. For drill grinding beds that part .For drill grinding beds that accept drills up to 21" long, carriage bed is 1-C. Drill bed Is 2-C. Feed screw Is 3-C, and Drill Stop Lock numbers are the same as those in P-4 For overseas distributors, specify HP ratings for replacement motors.

INSTRUCTION MANUAL

This equipment produces extremely accurate results,
PROVIDING THE OPERATOR FAITHFULLY FOLLOWS INSTRUCTIONS.

BEFORE USING THIS MACHINE, FIRST BE SURE THE WHEEL IS TIGHTEND AND THEN TRUE THE WHEEL with THE dresser, (19) sweeping the full length of the SLOTTED HOLES in the wheel cover. (Keep adequate thread tension on dresser's threaded shank.) Follow all industrial, OSHA, and other recommended safety practices while operating **THIS** equipment.

Below, the arrows on the grinding wheel show the wheel's correct rotation. All single phase motor are wired for 110 V. For other voltages, wiring schematic plate riveted to motor housing. 3 phase motors must be wired at purchasers' destination by a licensed electrician in accordance with local electrical codes.



INSTRUCTION MANUAL

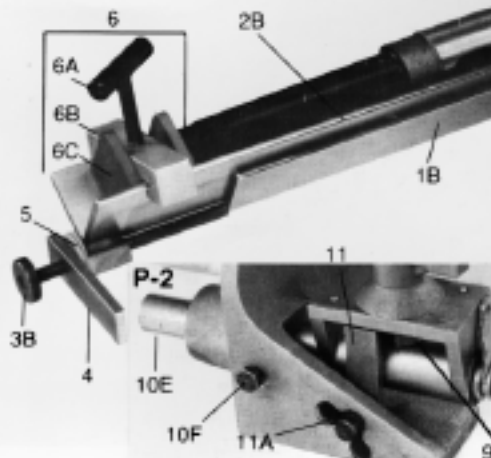
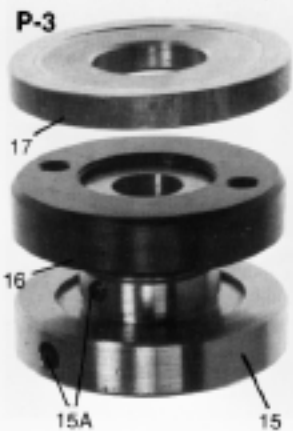
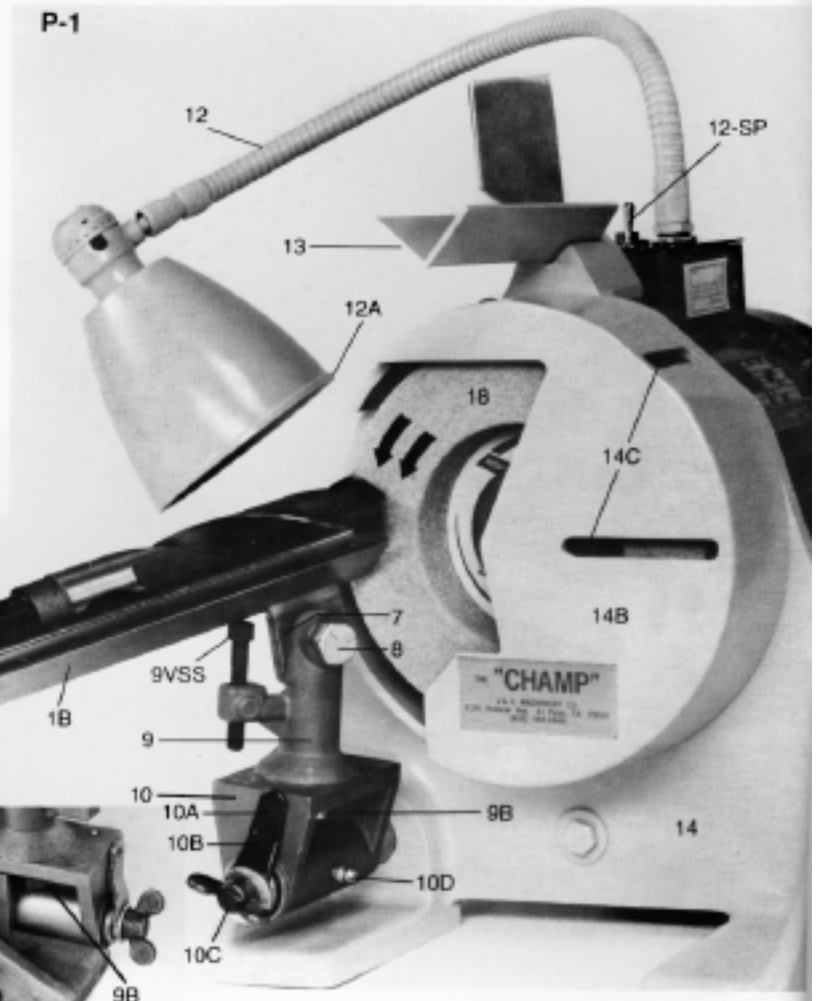
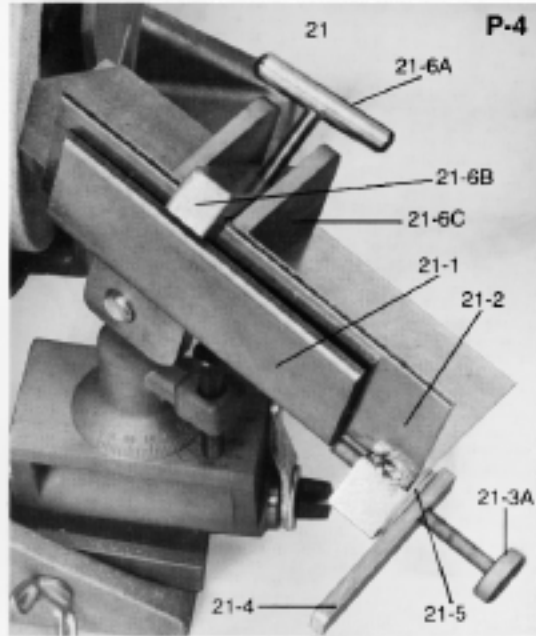
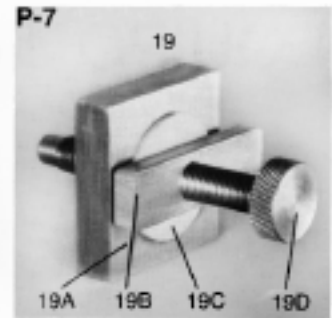
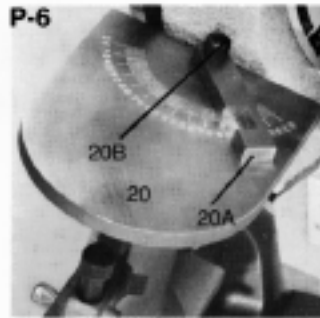
Note: This is the parts list for the single tool post machine which does not split the points. The machine shown on the cover with the two tool posts can split the point. However, with the exception of the splitting point, the operational instructions apply to both models.

This equipment produces extremely accurate results, **PROVIDING THE OPERATOR BECOMES THOROUGHLY FAMILIAR WITH THIS MANUAL AND ADHERES FAITHFULLY TO INSTRUCTIONS. DO NOT ATTEMPT DRILL SHARPENING UNTIL YOU READ THE ENTIRE MANUAL.** For satisfactory results, knowledge of drill point geometry is a must!!

BEFORE USING THIS MACHINE, FIRST TRUE THE WHEEL with the dresser (19) sweeping the full length of THE SLOTTED HOLES in the wheel cover. (Keep adequate thread tension on the dresser's threaded shank.) Follow all industrial, OSHA, and other recommended safety practices while operating **THIS** equipment.

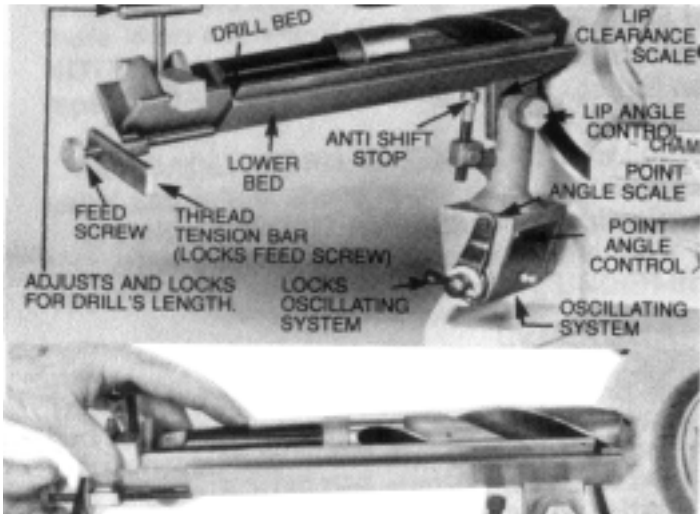
Below, the arrows on the grinding wheel show the wheel's correct rotation.

All single phase motors are wired for 110V. For other voltages, see wiring schematic plate riveted to motor housing. 3 phase motors must be wired at purchasers' destination by a licensed electrician in accordance with local electrical codes.



GRINDING STEPS. FOR BEST RESULTS & SAFETY, DUPLICATE HAND AND FINGER POSIITONS AS SHOWN.

STEP 1. Select desired lip clearance and point angles and elevate anti-shift stop to contact lower bed. For full details on angular settings, see the plaque that's attached to the motor's side.



STEP 3: With motor OFF, establish point to wheel & screw tip to lower bed's rear edge contact & rotate tension bar CLOCKWISE to increase thread tension.



GRINDING DRILLS under 3/16" P1: (For larger drills proceed to next paragraph). Align drill point in wheel area as shown. Lock swing assembly, snug dampening lever firmly against drill's body, start motor and back off feed screw VERY SLOWLY while left hand presses mechanism downward and forward until wheel sparks out.

Rotate drill and FIRMLY twist it into locator while PRESSING drill back against cube, retighten lever and job's completed. **GRINDING THE LARGER DRILLS (P2 & P3)** HOLD IT!! READ the print in P2 & 3. Draw back Drill Bed to clear the wheel, back off feed screw for metal removal, energize motor and press assembly forward. LEFT hand thumb applies LIGHT pressure on LEFT flute edge to force drill into locator. DON'T apply pressure on right flute edge, it will SCREW up the drill. For safety, be sure drill contacts the grinding surface WITHIN rim's width, then sweep drill across rim's full width, being careful not to stray off the rim. Grinding action ceases when wheel sparks out. Wheel will continue to produce light sparks after spark out. True spark out is determined when spark intensity decreases noticeably and grinding sound changes from harsh roar to a softer tone. With spark out, rotate drill to complete the job. However, if drills were ground at XLC thru MC, or you desire photo C & D points, proceed to next grinding procedure. If primary facet (PA) was ground at MC setting, grind secondary facet (SFC) as follows. Select HC setting on the lip clearance scale, follow step 3, back off feed screw and grind while frequently checking progress until facet size approximates that in PA and wheel sparks out. Then complete opposite side. If primary facet setting was LC, enlarge SFC to approximate size of white scribed line. If primal facet was XLC, enlarge SFC to approximate size as in PB.

NOTE! To save time, SFC can be ground by hand.

PC. This self-centering point can utilize XLC thru AC primary facets. Same grinding procedures as with Photo A but be sure wheel sparks out before facet dividing line approaches the chisel's midway point. Then back off the feed screw very slightly several times with spark outs after each feed screw adjustment until the facet dividing line reaches the chisel's midway point. Then rotate drill to grind the other side.

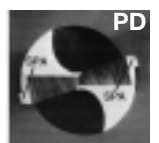
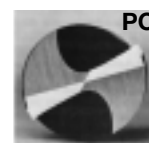
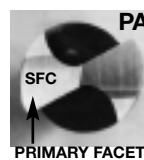
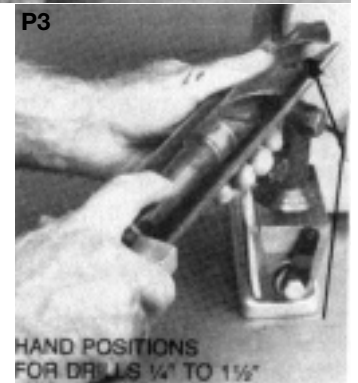
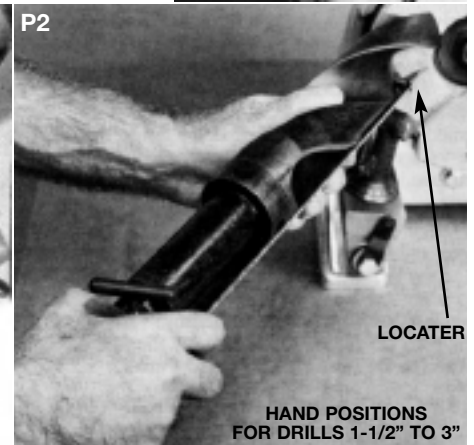
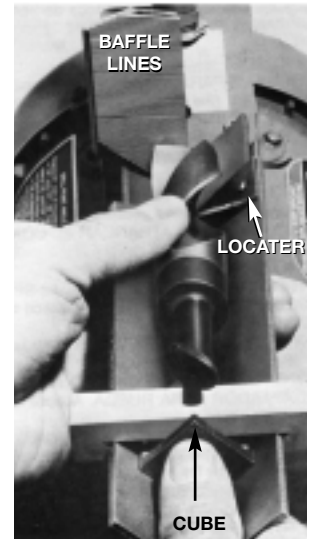
NOTE: Until practice is acquired, It's best to leave facet dividing line a little short of chisel's midway point since it still results in an effective self-centering point. If the facet line is accidentally over extended, RE-INDEX and start over.

P D. Secondary Drill Point Angle (SPA). For primary lip clearances that were ground at AC thru HC, align and lock 90 mark of ring scale with SPA and grind until desired size of SPA and spark out is achieved. Then grind other side. For lip clearances ground at XLC thru MC, first complete SFC and RE-SET carriage bed at AC LIP CLEARANCE setting. Then align 90 degree mark with SPA setting. SPA equals 15 to 25 percent of cutting lip's overall length.

NOTE: SPA can be ground on all types of points. (See instruction manual for more details)

STEP 2: INDEXING

Begin with left lip DECLINING down across baffle lines and flute edge in contact with Locator's inclined plane. Thumb on LEFT flute edge presses drill lightly against locator. RIGHT thumb applies steady forward pressure on cube to spiral lip into alignment with baffle line. (Avoid point and baffle contact.) For tiny drills, dampening lever (P1) takes place of left thumb. After Indexing, LEFT hand carefully tightens Back Stop. Before sharpening the drill, be sure there's contact with flute edge against locator's inclined plane and drill's rear against cube.



The following "Special GRINDING PROCEDURES" are a **MUST** when converting a standard drill to the flat grind, changing point angles, dealing with excessively ground, badly worn, or broken drills.

BROKEN DRILLS: Extend drill beyond drill bed just enough to expose drill to the wheel and grind a little more than halfway through drill's diameter and spark out the wheel. Then, use the indexing gauge to check the newly ground lip and baffle line alignment. If there is alignment, grind the opposite broken side to complete the job. If there is no alignment, RE-INDEX and re-grind the new cutting edge, spark out and complete the second side.

NOTE: Even after a drill is correctly re-indexed and re-ground, always double check the lip and line alignment and repeat CORRECTIVE grinding action again if necessary.

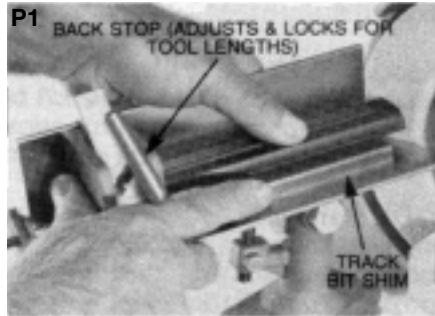
FOR BADLY WORN, OVER-GROUND or conversion of CONVENTIONAL POINTS to the FLAT GRIND, Index as usual and follow above re-grinding and re-indexing procedures.

CHANGING POINT ANGLES: If changing from blunt to a more spear shaped point, OVER-INDEX with the cutting edge angling up across two baffle lines and follow above re-grinding procedures. When changing from spear-shaped to a more blunt point, UNDER-INDEX 2 lines and use the same re-grinding procedures.

INTERCHANGEABLE ATTACHMENTS

Track and Spade bits are extended beyond drill bed approximately 1/4" for tool exposure to grinding wheel. Note: In P1 and P2 that both hands and fingers SQUEEZES support and drill beds TOGETHER and hands oscillate the attachment across the rim's FULL width.

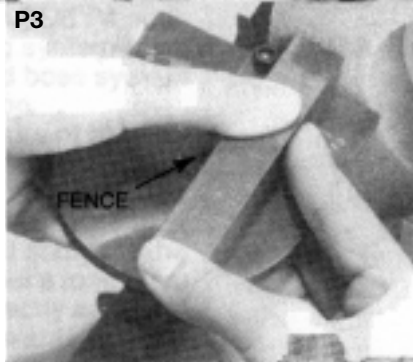
P1-Left thumb is squeezing support and drill beds together and simultaneously pressing down on track bit. Right thumb is pressing tool against wheel and index finger presses shim against bed's vertical wall.



P2-Similar technique on spade bits but both Index fingers are pressing on tool and both thumbs are pushing tool towards wheel.



P3-Right thumb feeds workpiece to the wheel while index finger and left thumb keeps workpiece against the fence. Both hands work together with remaining fingers gripping table's under surface to sweep workpiece across rim's FULL with.



NOTE: Table's front end must be within 1/8" clearance with wheel and controls **FIRMLY** locked.

HELPFUL HINTS

If a drill doesn't function, it's due to INSUFFICIENT lip clearance resulting from improper indexing; insufficient SECONDARY facet size on drills sharpened with low lip clearances or excessive grinding. Correct grinding begins in the area of the heels and soon as it moves forward to completely resurface the cutting edge, grinding **MUST** cease IMMEDIATELY Further grinding REDUCES lip clearance accordingly. If excessive grinding occurs, the drill **MUST** be re-indexed and reground.

Inaccuracy results from failure to grind until screw tip engages lower bed; inadequate feed screw thread tension; drill not fully engaged in locator; UNEQUAL or distorted lands: bent drills, flute debris; failure to sweep BOTH drill faces equally across grinding rim's FULL width; Inadequate tightening of lip relief, drill point angle or drill stop lock controls, or failure to raise-shift stop into contact with lower bed.

MOST IMPORTANT: With drills, especially large ones, increased heat build up and expansion in grinding the second face results in additional metal removal & inaccuracy. So, a coolant is a **MUST**.

SHORT bodied tapered shank drills tend to rock in the drill bed. This is prevented with short pieces of extruded aluminum angle, under shank's rear against the cube and taped to drill bed.

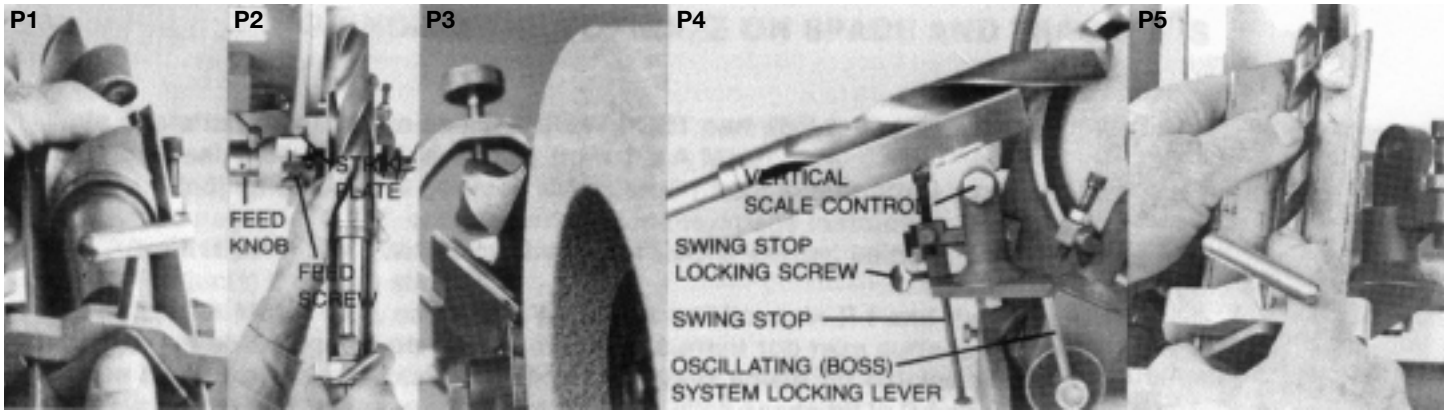
For offset point centers to prevent drill binding in deep soft metals, complete both drill faces and back off feed screw to grind slight additional amount off second face.

Do not remove the plastic washer on the feed screw mechanism. To retain its frictional properties, **AVOID LUBRICANTS AND KEEP IT CLEAN** with soap and water.

After wheel dressing, ALWAYS stone the wheel LIGHTLY with dressing stick. It OPENS the wheel and increases grinding action at least 200 percent. Diamond dressing is best for trueing the wheel, but also DULLS the wheel and drastically reduces grinding action.

Due to the machine's unlimited drill diameter range and ability to grind a wide range of tools and other metals it is recommended to maintain fine and coarse grit wheels on hand for maximum customer satisfaction For best results, use interchangeable diamond wheel for drills No. 60 through 1/8" diameter, 60 grit for 1/8" through 3/8", 46 grit for 3/8" through 3/4"; and 36 grit for drills above 3/4" diameter. For replacement wheels or operational assistance, feel free to contact us at the address below.

INSTRUCTIONS FOR GRINDING SPLIT POINTS, DUBBED DRILLS, PUNCHES & DIES



POINT SPLITTING STEP 1. With drill bed in position to wheel's right (P1), position drill so it's point is roughly flush with front end of the bed and flute edge is in contact with the locator. Then LEFT thumb presses drill's left flute lightly to torque drill against locator and RIGHT thumb applies steady forward pressure on cube until cutting edge spirals into the approximate 15 to 20 degree angle from the vertical as shown.

STEP 2: Rotate tool post to align desired number with the etched indicator. **NOTE: 90 thru 86 on the right half of the ring scale produces greater drilling efficiency accordingly and 90 thru 86 on the left side results in a little less drilling efficiency but more durable points accordingly.**

STEP 3. a. Adjust feed knob with left hand to put drill in P2 position (P3 is frontal view of P2). Right hand accomplishes P4 position (note drill bed's angle to the wheel) and then hold P4 position with LEFT hand while right hand LOCKS vertical scale control and oscillating system in P4 position. b. Bring feed screw tip into Strike Plate contact. c. Unlock swing stop and boss system to permit 1" to 1-1/2" clearance between drill point and wheel and relock swing stop.

STEP 4. a. Energize motor. b. Adjust both feed controls SLIGHTLY for light exposure of the drill to the wheel. c. DUPLICATE hand grips of P2 or P5, in accordance with the drill's size. (Note that left thumb presses the LEFT flute to torque drill against locator.) (Thumb pressure also restrains drill in the bed when drill's being notched). d. Press drill assembly lightly against the wheel until wheel sparks out. Then remove drill to examine notch's progress and compare the notch against the following figures. If the notch's apex is in alignment with the chisel's long (line) axis as shown in Fig. A, It indicates that both knob and feed screw settings are correctly adjusted and additional readjustment of BOTH controls will correctly advance the notch towards the dotted line "V" in fig. A. Once wheel sparks out at desired depth (feed screw tip & strike plate contact), grind opposite notch without disturbing the feed control settings.

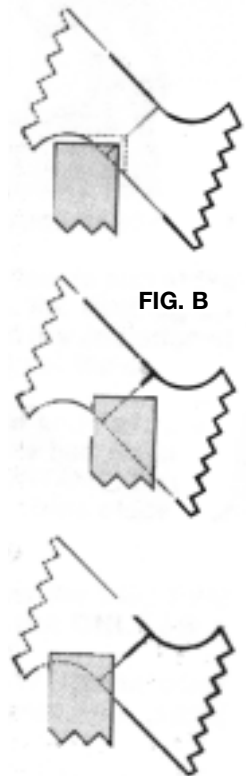


Fig. B is the result of excessive Knob Feed setting. Drill point was moved too much laterally (to the left) into the wheel's rim. As a result, this notch has screwed up the cutting edge and drill must be repointed and then renotched. Excessive feed is avoided by repetitious LIGHT lateral adjustments and frequent inspections.

Fig. C shows excessive feed screw adjustment. However, this point is salvageable by completing the other side but first reduce the feed screw setting. The correct setting would have been to the dotted line. in short, make repetitious LIGHT re-adjustments of either or both controls as indicated to keep the notch's apex in alignment with chisel's long axle (Fig. A). For point splitting, there are no substitutes for skill and PRACTICE. The rewards are INCREASED safety and profits.

IMPORTANT NOTES. a. Minimum chisel length is .005" for small drills and .012" for large drills. b. As wheel loads up, FREQUENTLY and lightly stone both wheel's face and side rim with NORBIDE dressing stick. (Available from NORTON WHEEL SUPPLIERS). Use diamond dresser ONLY to restore wheel's balance and sharp corner: ALWAYS restore wheel after EVERY diamond dressing. d. MOST IMPORTANT. If a heavy tapered shank causes the drill to rock, place a 1-1/2" long x 5/16" thick piece of angle steel (shim) AGAINST the cube, UNDER the TANG. DUBBED DRILLS utilize the same technique as point splitting but index the cutting edge into a 90 degree vertical angle, plus or minus 4 degrees.

PUNCHES & DIES: a. First place a square block gauge in the Punch & Die Bed and square the bed to the wheel, horizontally and vertically. The Anti-shift Stop is used to fine tune vertical squaring and then press the bed against the shift stop when tightening the vertical control. b. Insert tool, apply clamp and rotate Feed Knob to bring tool up to the wheel but DO NOT, repeats, DO NOT make contact with the wheel. c. Energize motor and SLOWLY rotate Feed Knob with left hand while right hand sweeps tool across full width of the grinding rim.

IMPORTANT!! Don't sweep workpiece off the rim's full width until wheel sparks out.

IMPORTANT NOTE. A special wheel is required for point splitting and dubbing.
When reordering, specify part **MA-CHAMP#19SPW** or Point Splitting Wheel.

GRINDING THE TOP RAKE ON SPADE AND TRACK BITS

This operation requires the special SKEW POST part MA-CHAMP#SP-1, and specialized grinding wheel, part MA-CHAMP#19SPW, available from Newman Tools. Before grinding, familiarize yourself with certain functional parts shown on the previous page In P2, P4, and the parts list in the 6 page Instruction Manual.

STEP 1: First put a 3/16" radius on the wheel's outer corner, using a Norbide dressing stick.

STEP 2: With Motor OFF, set up the spade bit as shown In P1 and then use the spade bit as a gauge by paralleling the bit's current top rake surface to the grinding rim's surface. (pivoting the Skew Post and spade bit clockwise produces more rake and less rake with CCW motion). With spade bit In P1 position, lock the Oscillating (Boss) System and bring the Feed Screw's tip into CONTACT with the Strike Plate.

STEP 3: Now manipulate the FEED KNOB to BREAK contact (slightly) between the spade bit and wheel's grinding rim.

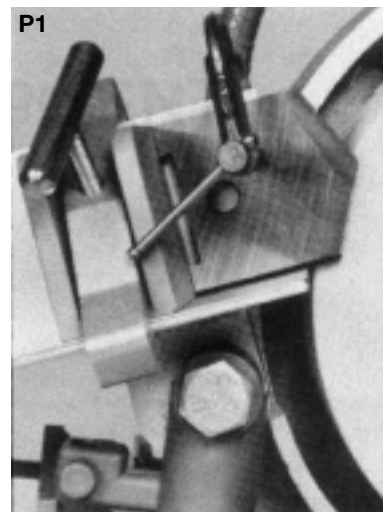
STEP 4: Energize motor and bring the tool back into a very brief and light wheel contact. (Oscillating System remains locked and feed screw tip in contact with the Strike Plate.) Then shut off motor, unlock the Oscillating System and draw spade bit assembly back from the wheel to check progress and make any necessary adjustments to assure that freshly reground new surface is parallel to the previously ground old surface.

STEP 5: With corrected adjustments, RELOCK the oscillating system (being sure there's screw tip and strike plate contact and manipulate the Feed Knob until desired amount of top rake is reground **Note: Backing off screw tip from Strike Plate controls extension of top rake towards the tool's rear while increased manipulation of the Feed Knob increases the lip rake's depth. Therefore, periodically check progress and adjust the controls accordingly.**

STEP 6: With top rake completed on the first side, unlock the oscillating system, (Feed screw and Feed knob settings remain undisturbed) rotate and reclamp tool to grind opposite top rake and press the bed assembly against the grinding wheel until wheel sparks out and screw tip contacts the strike plate. **IMPORTANT!** Be sure both sides of the tool are ground with the wheel sparking out and screw tip CONTACTING the strike place. For track bits, use same technique but clamp track bit shim between bit and bed wall.

WARNING: The maximum safe speed of standard 7" diameter type VI wheels is rated below the 3450 RPM speed of our motors. Consequently they are dangerous and it is strongly emphasized that you use ONLY wheels available from Newman Tools as they match the speed of our motors.

When mounting diamond or horizon wheels on the machine, first place the wheel, spacer No. 17 (special order item) with recessed side (bearing surface side) facing you, then mount wheel and apply retaining flange directly in contact against wheel and tighten firmly.



CARE OF EQUIPMENT

LUBRICATION - Light grease on the Boss's shaft and grease fitting on Boss's swivel joint; dry lubricant, graphite spray paint on diamond holder (opposite side from threaded knurled head), INNER surfaces of lower carriage bed and powdered graphite on 9VSS AVOID LUBRICANTS ON PLASTIC WASHER ITS ADJACENT SURFACES, CONTACT AREA BETWEEN VERTICAL SCALE AND POST, AND DRILL STOP LOCK ASSEMBLY. Keep sliding surfaces free of abrasive particles with small paint brush, or compressed air.

The motor is permanently lubricated at the factory, and has a built-in thermal (heat switch) which automatically cuts off power to prevent excessive heat and damage. Therefore, if motor suddenly quits, allow it to cool off before restarting. However, if it shuts off repeatedly, have it checked. Motors carry a one year warranty from purchase date and your local branch of W.W. Grainger will service motor without charge! providing It's not altered. The drill grinding mechanism is guaranteed for one year from date of purchase for any defective pads attributed to the company. However, we are not responsible for any damage of the equipment as a result of careless abuse. Nor will Newman Tools be held responsible or liable for any and all physical injuries that result from the operator's failure to adhere to this Instruction Manual's advice, and all other recommended safety practices. Since this Instruction manual is furnished with each of our drill and tool grinders, it is the sole responsibility of any and all operators to read this instruction manual prior to operating ICS Cutting Tools drill and tool grinding equipment.