BK65
Drill Sharpener
Operator’s Manual
SAFETY INSTRUCTIONS FOR DAREX BK65 SERIES DRILL SHARPENERS

**CAUTION**: For Your Own Safety Read Instructions Manual Before Operating Grinder.

**USE WHEELS MARKED AT OR OVER RPM OF 3450.**

**ALWAYS USE GUARDS AND EYE SHIELDS. DO NOT OVER TIGHTEN WHEEL NUT. USE ONLY PARTS FURNISHED WITH THIS GRINDER.**

Always disconnect grinder from the power supply while motor is being connected or reconnected.

**INSTALLATION**

Check grinder nameplate to make certain the rating is correct for the power supply, voltage and frequency.

Mount grinder on solid bench. It may be used without bolting down for light work. For heavy work it should be bolted down to the mounting surface. If mounted on pedestal, bolt grinder securely to pedestal and bolt pedestal to floor.

All attachment plugs and any receptacles shall be replaced with devices tested for the voltage for which the motor is reconnected.

After making connections, make sure they are secured and properly insulated.

When starting a grinder for the first time or after installing a replacement wheel, it is most important that the operator stand aside for at least one minute.

This is the correct practice since vitreous and similar type grinding wheels can explode if they have received minor cracks from shipping.

**OPERATION**

Check that switch is in OFF position and that wheels rotate freely. Insert lug into receptacle and turn on switch. Grinder should come up to speed smoothly and without vibration.

**MAINTENANCE:**

The ball bearings used are lubricated for life and do not require additional lubrication.

Vibrate off and dispose of grinding particles to prevent accumulation.

**SAFETY INSTRUCTIONS**

**GROUNDING INSTRUCTIONS**

All grounded, cord-connected tools:

1. In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. The tool is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances.

Do not modify the plug provided -- if it will not fit the outlet, have the proper outlet installed by a qualified electrician.

The proper connection of the equipment-grounding conductor can result in a risk of electric shock. The conductor with insulation, having an outer surface that is green with or without yellow stripes, is the equipment-grounding conductor. If repair or replacement of the electric cord plug is necessary, do not connect the equipment-grounding conductor to a live terminal.

Check with a qualified electrician or serviceman if the grounding instructions are not completely understood, or if in doubt as to whether the tool is properly grounded.

Use only 3-wire extension cords that have 3-prong grounding plugs and 3-pole receptacles that accept the tool's plug.

Repair or replace damaged or worn cord immediately.

2. Grounded, cord-connected tools intended for use on a supply circuit having a nominal rating less than 150 volts:

This tool is intended for use on a circuit that has an outlet that looks like the one illustrated in Figure A. The tool has a grounding plug that looks like the plug illustrated in Figure A. A temporary adapter, which looks like the adapter illustrated in Figures B and C, may be used (except in Canada) to connect this plug to a 2-pole receptacle as shown in Figure B. If a properly grounded outlet is not available, the temporary adapter should be used only until a properly grounded outlet can be installed by a qualified electrician. The green-colored rigid ear, lug, etc., extending from the adapter must be connected to a permanent ground such as a properly grounded outlet box.

3. Grounded, cord-connected tools intended for use on a supply circuit having a nominal rating between 115-250 volts, inclusive:

**B. FOR ALL TOOLS**

1. KEEP GUARDS IN PLACE and in working order.

2. REMOVE ADJUSTING KEYS AND WRENCHES. Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning it on.

3. KEEP WORK AREA CLEAN. Cluttered areas and benches invite accidents.

4. DON'T USE IN DANGEROUS ENVIRONMENT. Don't use power tools in damp or wet locations, or expose them to rain. Keep work area well lighted.

5. KEEP CHILDREN AND VISITORS AWAY. Remove starter keys and turn off master switches.

6. PADLOCK EQUIPMENT or work area when not in use.

7. DON'T FORCE TOOL. It will do the job better and safer at the rate for which it was designed.

8. USE RIGHT TOOL. Don't force tool or attachment to do a job it was not designed for.

9. WEAR PROPER APPAREL. No loose clothing, neckties, rings, bracelets, or other jewelry to get caught in moving parts. Non-slip footwear is recommended. Wear protective hair covering to contain long hair.

10. ALWAYS USE SAFETY GLASSES. Also use face or dust mask if cutting operation is dusty. Everyday eyeglasses only have impact resistance lenses; they are NOT safety glasses.

11. SECURE WORK. Use clamps or a vise to hold work when practical. It's safer than using your hand and it frees both hands to operate tool.

12. DON'T OVERREACH. Keep proper footing and balance at all times.

13. MAINTAIN TOOLS WITH CARE. Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.

14. DISCONNECT TOOLS before servicing; when changing accessories such as blades, bits, cutters, etc.

15. AVOID ACCIDENTAL STARTING. Make sure switch is in OFF position before plugging in.

16. USE RECOMMENDED ACCESSORIES. Consult the owners manual for recommended accessories. The use of improper accessories may cause hazards.

17. NEVER STAND ON TOOL. Serious injury could occur if the tool is tipped or if the cutting tool is accidentally contacted.
18. CHECK DAMAGED PARTS. Before further use of the tool, a guard or other part that is damaged should be carefully checked to assure that it will operate properly and perform in its intended function -- check for alignment of moving parts, binding of moving parts, breakage of parts, mounting, and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced.

US DEPARTMENT OF LABOR
Form Approved Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET
Required under USDL Safety and Health Regulations for
Ship Repairing, Shipbuilding and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I
MANUFACTURER'S NAME: Durex Corporation
EMERGENCY PHONE NO: (541) 488-2224
ADDRESS: 220 East Hersey Street, Ashland, Oregon 97520
CHEMICAL NAME & SYNONYMS: Diazon-Electroplated Diamond/CBN Products, Diamond (uncoated), man-made
Diamond, RVS, MBG, MBS Product Families, Standard Series and 300 Series Diamond Micron Powder
TRADE NAME & SYNONYMS: Electroplated CBN Wheels, Electroplated Diamond Wheels
CHEMICAL FAMILY: Abrasive/Any Grade FORMULA: N/A

SECTION II - HAZARDOUS INGREDIENTS
PAINTS, PRESERVATIVES, TLV (UNITS) TLV (UNITS)
&SOLVENTS %:

Pigments ----- Base Metals ----- Catalyst ----- Alloys ----- Vehicle ----- Metallic Coatings ----- Solvents ----- Filler Metal ----- Additives ----- Plus Coating/Core Flux ----- Others ----- Others ----- HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS OR GASES (UNIT)

SECTION III - PHYSICAL DATA
BOILING POINT (F) NAIF SPECIFIC GRAVITY (H20 = 1) NAIF VAPOR PRESSURE NAIF VAPOR DENSITY (AIR = 1); NAIF PERCENT VOLATILE NAIF BY VOLUME (%): NAIF SOLUBILITY IN WATER; NAIF EVAPORATION RATE (=1 NAIF APPEARANCE AND ODOR: Clear, White To Yellow To Dark Crystals Silver Color

SECTION IV - FIRE AND EXPLOSION HAZARD DATA
FLASH POINT (METHOD USED FLAMMABLE LIMITS LELUEL NAIF

EXTINGUISHING MEDIA: Water SPECIAL FIRE FIGHTING PROCEDURES: None UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V - HEALTH HAZARD DATA
THRESHOLD LIMIT VALUE EFFECTS OF OVEREXPOSURE
INHALATION: If dust generated, it could contain nickel. Inhaling it can cause respiratory disease. Dust can result from grinding ingestion. NAIF

SKIN: Prolonged contact with nickel may cause dermatitis. More frequently at high temperature & humidity. Wash skin with water. Seek medical attention if needed.

SECTION VI - REACTIVITY DATA
STABILITY UNSTABLE CONDITIONS TO AVOID STABLE X

SECTION VII - SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION (Specify type) Respiratory protection as needed see OSHA 29 CFR 1910.134
VENTILATION LOCAL EXHAUST SPECI Recommended see OSHA 29 CFR 1910.94

SECTION VIII - SPECIAL PROTECTION INFORMATION
PROTECTIVE GLOVES EYE PROTECTION As desired by user Recommended see OSHA 29 CFR 1910.135

OTHER PROTECTIVE EQUIPMENT NAIF

SECTION IX - SPECIAL PRECAUTIONS
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING NAIF OTHER PRECAUTIONS NONE

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BK65 DRILL SHARPENERS OPERATORS’ GUIDE

MACHINE SET-UP:

A. To install cradle, locate pins to holes in swing casting for either 118° or 135° point angle. (see indicators on left side of cradle).

B. Slide the drill clamp assembly on cradle to within 4 to 5 inches of the pivot end of the cradle.

C. Slide drill stop onto cradle approximately 1” from end.

SETTING THE BK65 DRILL GRINDING MACHINE TO GRIND A DRILL POINT.

1. Set alignment to the size of drill to be sharpened by loosening the knurled knob (A). Slide the fixture up or down to set the arrow with the appropriate mark on the decal to the drill size. Then tighten the knob.

2. Changing relief on the drill may be done as follows: Loosen the Drill Relief Knob, and rotate the alignment body to either plus or minus depending upon which you wish, more or less relief. Moving the alignment body one line will change the relief approximately 4 degrees on 1 1/4 drill. The relief change will lessen as the drill size increases.
3. Extend alignment plunger all the way toward the drill point and lock by pushing in on Pin “B”.

4. Insert the drill to be sharpened into the cradle. Push all the way until the tip touches the alignment pawl. Rotate the drill so the cutting lip is flat against the pawl ear.

NOTE:
To sharpen drills under 1” in size, or Morse taper drills that have the taper larger that the drill itself shims are supplied to accommodate this situation. See page 8 under “SHIMS”.

5. Slide drill stop toward drill until stop plate is against drill shank and tighten lock knob “C”.

6. Move drill clamp handle to right for the align position. Loosen the drill clamp shaft knob and lower shaft down until it contacts the drill.

Keep your BK65 Drill Sharpener clean and properly maintained. Frequently empty the magnetic grit tray on the left side of the sharpener. Or insert a vacuum hose into the port provided.
7. Loosen drill clamp lock knob (F), slide the clamp to the flute nearest to the drill shank, making sure that the dog rests at the edge of the flute (D).  

8. Tighten the clamp lock knob (F).

9. Tighten drill clamp shaft knob (E).

10. Secure drill by moving the drill clamp handle to the straight up position. Disengage the alignment lock pin by pulling it out and moving the plunger away from the drill. Turn the motor on.

11. GRINDING THE DRILL:
Hold the drill bit cradle with the right hand and slowly move it to the right, (at this point it should not touch the wheel), now pivot it back to the left. Move the drill clamp handle to the “Disengage” position. Turn the feed knob approximately 1/4 turn clockwise, now move the drill clamp handle to the “Clamp” position. Swing the cradle to the right again, which will move the drill tip into the wheel to grind it. Swing left and right until the grinding process is complete on one side. Repeat the feed process if you need to take more material off.

NOTE: Do not feed the drill bit too much on the initial grinding. Because the feed knob positions the drill bit for “both sides” of the drill point, over feeding on the first side may cause over grinding on the opposite side. The unwanted result may be extreme heat buildup or drill point burning on the second side of the drill point.

12. Pull cradle all the way to the left until it locks in the ball detent. Move drill clamp handle to the rotating position to loosen the drill in the cradle.

Rotate the drill clockwise until the flute alignment dog falls into the opposite flute, then rotate it the opposite direction until dog is touching the edge of the flute. See fig below.
13. Move the drill clamp handle to the vertical position to secure the drill. Grasp the cradle and swing it to the right slowly, then back and forth until grind is complete. (Note: Do not feed drill on this second grind.) The drill point is now sharpened.

**THINNING THE WEB**

1. Move the drill clamp handle to the rotate position, unlocking the drill. Loosen the clamp lock knob, (see F, previous page), move the drill clamp assembly toward the point of the drill about 1 inch. Move the alignment pawl pin to the web thin position and push it in to lock, "A".

Fig. 1

2. Rotate the drill so the cutting lip touches the pawl ear. Loosen the feed lock knob and slide the drill stop plate up to and against the shank of the drill, tighten the feed lock knob. (See Fig. 5, page 5).

Fig. 2

3. Slide the drill clamp toward the drill shank until the flute alignment dog touches the land of the drill, then tighten drill clamp knob.

Fig. 3

4. Rotate drill clamp handle to the vertical position to lock drill down. Pull alignment pin out and move pawl away from drill tip. Lift web thin stop (B) up and toward you, and turn adjustment knob clockwise enough to prevent the drill from touching the wheel. Turn machine on.

Fig. 4

Always wear safety glasses when sharpening drills with the BK65 or any open wheel cutting tool sharpener or grinder.
5. Carefully and slowly pull cradle to the right, watching drill point. Now turn web thin knob “Counter Clockwise” until drill begins to grind on wheel and thin the web. (See “Web Thinning Procedures”). Continue turning knob and removing material, making sure to back away periodically to let drill cool. Remove material of an amount to approximately 1/2 of the web thin amount or less. When finished, move cradle to the left until it stops and is held by the ball detent.

6. Move Drill Clamp Handle to the rotate position to loosen drill. Rotate drill 180° until the flute alignment dog falls into the opposite flute, then rotate it in the opposite direction until the dog is touching the edge of the flute. (Fig 6.) Move Drill Clamp Handle to the vertical position to lock drill down. Slowly move cradle to the right again, carefully grinding the other side of the drill tip. (Note: Do not adjust the web thin stop knob.) Remove material until the cradle is stopped by the web thin stop screw. You have now completed the web thin.

7. Turn machine off. Rotate drill clamp handle to align position to loosen drill. Flip drill stop up and out of cradle. Pull drill out from the back end of the cradle.

WEB THINNING PROCEDURES

The twist drill is designed in such a way that the web thickness increases toward the shank. In grinding drills it is sometimes necessary to thin the drill web. This is done in order to obtain improved centering and lowering drilling thrust. The chisel edge carries approximately 60 to 70% to the total thrust in drilling. Consequently, it is very beneficial to thin the web after the drill has been repeatedly sharpened. The illustrations below show a couple web thinning styles. However, the BK65 will normally thin the web as shown in Fig. 1. If you wish to thin the web to appear as in Fig. 2, merely rotate the cutting lip approximately 1/16” to 1/8” away from the alignment pawl ear.

For drilling steel, the point should be thinned so that the web is about 10% the drill’s diameter. When drilling light alloy metals and brass alloys, the amount should be 12 - 14% the drill’s diameter.

SHIMS: SMALL DRILLS & MORSE TAPER DRILLS

Shims have been included with the BK-65 to accommodate drills under 1” down to 3/4” in size. Also, for Morse taper drills that the taper portion is larger than the drill itself. How to use the shims: For drills between 3/4” and one inch sizes, insert the longest shim between the drill and the cradle. For short drills use the short shim. Make sure the shim does not protrude beyond the area of the drill that is to be sharpened, so as not to grind the shim. Align the drill as described on page 4 & 5. Set to the appropriate mark for the drill size to be sharpened. Note the dual marks on the decal. For example the mark for the drill of 3/4” size will be on the same line as the 1” mark. The procedures for the alignment and grinding will stay the same as shown in the manual.
Make sure the shim is directly underneath the clamping handle, under the drill, so as to firmly hold the drill solid. The key to setting the size range of the drill on the alignment is - if in swinging the cradle around to grind the drill and it is noticed that the drill hits the wheel prior to feeding it, then the size setting needs to be set a fractional amount lower than the setting that it was on. Then realign the drill.

**SHARPENING CORE DRILLS**

Set cradle perpendicular to wheel, pointing straight out and away from machine.

**FOUR FLUTE**

Lay drill into cradle, position one cutting lip straight down, making sure drill is approximately 1/16” away from wheel.

Move drill stop toward drill until stop plate touches drill shank and tighten lock knob “c” page 5.

Pull the cradle all the way to the left until it locks in the ball detent. Make sure drill clamp handle is in the rotate position.

Extend the alignment plunger all the way toward the drill point and lock. Rotate drill so cutting lip is against the pawl ear.

Loosen drill clamp tightening knob, slide the clamp to the flute nearest to the drill shank, making sure that the dog rests at the edge of the flute.

Tighten the drill clamp shaft knob.

Secure the drill by moving the “drill clamp handle” to the vertical position.

Disengage the alignment lock pin by pulling it out and moving it away from the drill point.

**THREE FLUTE DRILL**

Set cradle pointing straight out from machine perpendicular to wheel.

Position drill almost touching wheel, but not quite.

Now set drill stop plate against shank of drill and tighten.

Loosen alignment relief knob and set red mark on line marked on fixture and tighten lock knob.

Pull relief setting plunger pin out and extend plunger toward drill tip and lock.

Rotate drill cutting lip until it touches the pawl ear.

Loosen drill clamp knob and slide clamp toward drill point until dog is resting on the flute edge, then tighten drill clamp knob.

Rotate “drill clamp handle” to straight up position to secure drill.

Pull relief setting plunger out & move pawl away from drill tip.

Grind as you would a normal drill.

Rotate to each flute as for a normal drill.
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* Suggested Dealer Stock Parts