DAREX AP5100

Auto Precision Drill Bit Sharpener

See other DAREX sharpeners on back!

OPERATING INSTRUCTIONS

APOPEN9262000

Safety Instructions

WARNING:

REMEMBER FOR YOUR OWN SAFETY, READ INSTRUCTION MANUAL BEFORE OPERATING TOOL AND SAVE THESE INSTRUCTIONS. Wear Eye Protection. Never touch internal parts of the sharpener when the sharpener is on. The rotating grinding wheel can cause injury. Use caution when replacing the grinding wheel. Follow instructions entitled "Replacing The Grinding Wheel", in this Instruction Manual. Regularly empty accumulated grinding dust. Follow instructions entitled "DAREX AP5100 Cleaning Maintenance" in this Instruction Manual.

WARNING: WHEN USING ELECTRIC TOOLS, BASIC SAFETY PRECAUTIONS SHOULD ALWAYS BE FOLLOWED TO PREVENT THE RISK OF FIRE, ELECTRIC SHOCK AND PERSONAL INJURY, INCLUDING THE FOLLOWING:

1.KEEP GUARDS IN PLACE and in working order. Never perform grinding operation with the wheel cover removed.

2. REMOVE WRENCHES. Form a habit of checking to see that the wrench is 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. Do not use power tools in damp or wet locations, or expose them to rain.

5. STORE EQUIPMENT in a safe place when not in use. Keep out of reach of children.

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

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

8. 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.

9. MAINTAIN TOOL WITH CARE. Keep tools sharp and clean for best and safest performance.

10. DISCONNECT TOOLS from the power supply before service.

11. AVOID ACCIDENTAL STARTING Make sure switch is in the "OFF" position before plugging it in.

12. USE RECOMMENDED ACCESSORIES, Consult the owner's manual for recommended accessories. The use of improper accessories may cause hazards.

13. CHECK FOR 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 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.

14. DO NOT USE DAMAGED OR UNSHAPED WHEELS. Use grinding wheels suitable for speed of grinder.

15. NEVER LEAVE TOOL RUNNING UNATTENDED. Turn power off.

16. USE PROPER EXTENSION CORD. Make sure extension cord is in good condition. When using an extension cord be sure to use one heavy enough to carry the current the Drill Sharpener will draw. An undersize cord will cause a drop in line voltage, resulting in a loss of power and/or overheating.

17. The continuous A-weighted equivalent sound pressure level at the operator's ear is not over 60 dB (A).

18. Risk of injury due to accidental starting. Do not use in an area where children may be present.

19. The weighted root mean square acceleration value to which the arms are subjected to does not exceed 2.5 m/s²

GROUNDING INSTRUCTIONS

1. For all grounded, cord connected tools:

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. This 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.

Improper 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 or 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. See Table 1. Minimum Gauge Cords below.

2. Grounded, cord-connected tools intended for use on a supply circuit having a nominal rating less than150 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. See Fig. 1. Grounding methods below.

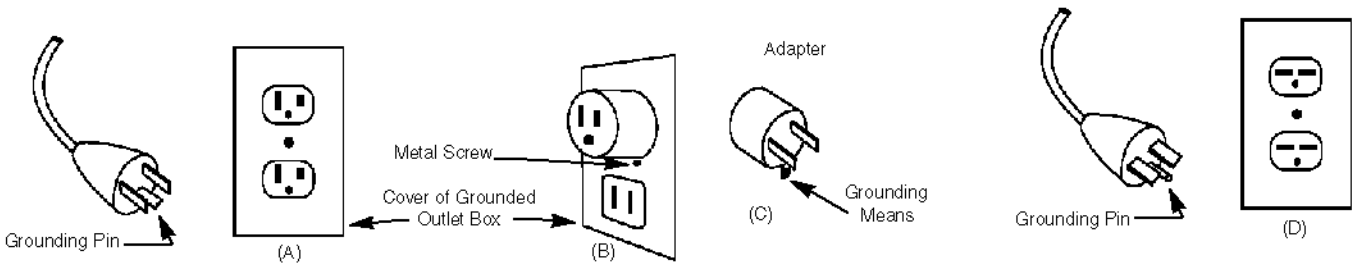
3. Grounded cord-connected tools intended for use on a supply circuit having a nominal rating between 150-250 volts inclusive: See Table 1. Minimum Gauge Cords below.

Table 1.
Minimum Gauge Cords

		Volts	Total length of cord in feet			
		120 V	25 ft.	50 ft.	100 ft.	150 ft.
Ampere Rating		240 V	50 ft.	100 ft.	200 ft.	300 ft.
More Than	Not More Than	AWG				
0	618			16	16	14
6	10		18	16	14	12
10	12		16	16	14	12
12	16		14	12	Not Recommended	

[a] Only the applicable parts of the Table need to be included. For instance, a 120-volt product need not include the240-volt heading.

Fig. 1.
Grounding Methods



Material Safety Data Sheet

US DEPARTMENT OF LABOR — Form Approved Occupational Safety and Health Administration — 0MB No 44-Ri 367

MATERIAL SAFETY DATA SHEET

Required under USDL Safety & Health Regulations for Ship Repairing, Shipbuilding and Chip breaking 129 CFR 1915, 1916.19171

SECTION I

MANUFACTURERS NAME: Darex Industrial Corporation
EMERGENCY PHONE NO (541) 488-2224
ADDRESS: 220 Hersey Street, Ashland, Oregon 97520
CHEMICAL NAME & SYNONYMS Diazon-Electroplated Diamond/CBN Products, Diamond (uncoated) Man-Made Diamond. RVG. 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 COMPOSITION

CHEMICAL NAME	Nickel	Industrial Diamond
REGULATED	Yes	No
CAS#:	7440-02-0	7882-40-3
AGIH TLV	1 0 mgm3	10.0 mg m3 (PNOC)
CARCINOGEN	Yes	No

Materials are regulated by OSHA 29 CFR 1910.1200, Hazard Communication Standard

SECTION III - PHYSICAL AND CHEMICAL DATA

BOILING POINT (F)	n/a	MELTING POINT	n/a
SPECIFIC GRAVITY	n/a	VAPOR PRESSURE	n/a
VAPOR DENSITY	n/a	EVAPORATION RATE	n/a
SOLUBILITY IN WATER	n/a	SOLUBILITY IN ALCOHOL	n/a
		SOLUBILITY IN OTHER SOLVENT	n/a
		PERCENT VOLATILE BY VOLUME (%)	n/a

APPEARANCE AND ODOR Solid, Clear, White To Yellow To Dark Crystals Silver Color.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	n/a		
(METHOD USED)	FLAMMABLE LIMITS	LEL	UEL
EXTINGUISHING MEDIA		n/a	
SPECIAL FIRE FIGHTING PROCEDURES:		n/a	
UNUSUAL FIRE AND EXPLOSION HAZARDS:		n/a	

SECTION V - HEALTH, FIRST AID AND MEDICAL DATA

PRIMARY ROUTE(S) OF ENTRY: Inhalation, Ingestion, Skin, Eye(s)

EFFECTS OF OVEREXPOSURE
INHALATION: Difficulty in breathing (Dust from wheel use).
INGESTION: If a dust, symptoms are variable.
SKIN: Irritation (especially if sensitive to Ni).
EYE(S): Irritation (from Ni or diamond particle).
FIRST AID AND MEDICAL INFORMATION:
INHALATION: Move to fresh air. Give oxygen if necessary
INGESTION: Obtain medical attention.
SKIN: Wash thoroughly with water Obtain medical help if necessary
EYE(S): Flush thoroughly with water. Obtain medical assistance

OTHER POTENTIAL HEALTH RISKS
Nickel (Ni) is listed as a carcinogen Avoid long exposure. Consult medical personnel for first aid and medical information

SECTION VI - CORROSIVITY AND REACTIVITY DATA

STABILITY:	Unstable ( )	Stable (x)
POLYMERIZATION:	May occur ( )	Will not occur (x)
INCOMPATIBILITY:	(Materials to avoid)	n/a
HAZARDOUS COMPOSITIONS PRODUCTS:		n/a

CONDITIONS TO BE AVOIDED: Contact with strong acids/caustics, enclosed areas.

SECTION VII - SPILL, LEAK AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Normal clean up procedure

WASTE DISPOSAL METHOD:
Waste will contain nickel. Dispose in accordance with all applicable Federal, state, and local regulations.

SECTION VIII – PERSONAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:
Respiratory protection as needed see OSHA-29 CFR 1910.134

VENTILATION: LOCAL EXHAUST: strongly preferred
MECHANICAL (GENERAL): Use only if adequate to maintain below TLV's.
PROTECTIVE GLOVES: As desired by user.
EYE PROTECTION: Recommended see OSHA29 CFR 11910.215
OTHER PROTECTIVE EQUIPMENT: Use standard precautions for grinding operations.

SECTION IX - STORAGE AND HANDLING PROCEDURES

NORMAL STORAGE AND HANDLING:
Store in clean, dry area, away from chemicals.
NORMAL USE: Use adequate ventilation (See Section VIII)

Form OSHA-20

THE DAREX STORY

Darex Corporation began in 1973 in Beecher, Illinois. The D, A and R of Darex are the initials of three generations of the Bernard family; David, Arthur and Richard Bernard. David and his father Richard founded Darex. Grandfather Arthur Bernard, who earlier founded the Bernard Welding company contributed his energy and guidance to Darex. Art's inventions revolutionized the welding industry.

In 1978, Darex relocated to Ashland, Oregon. Grandson Dave and son Dick carry on Arthur's legacy of inventiveness. Darex grew to become the most recognized name in the cutting tool sharpening industry. Today, Darex is a world-leading manufacturer of precision cutting tool sharpeners.

Darex is proud to offer a complete line of quality precision cutting tool sharpeners at affordable prices. Before our first days, we at Darex had looked at our competitor's sharpeners and asked ourselves: "Must cutting tool sharpeners be complicated? Why must the choice in sharpeners have either cost prohibitive accuracy or low price inaccuracy?" Our sharpeners prove you can have it all: Simplicity, Accuracy, and Affordability.

We have always emphasized innovative product design and tested technology. The experienced personnel at our modern manufacturing facility use the latest production methods. The Darex marketing team knows first-hand the machines we sell and will guide you to the best machine for your needs. Our skilled technical service department is happy to answer your questions about our products or cutting tools.

The AP5100

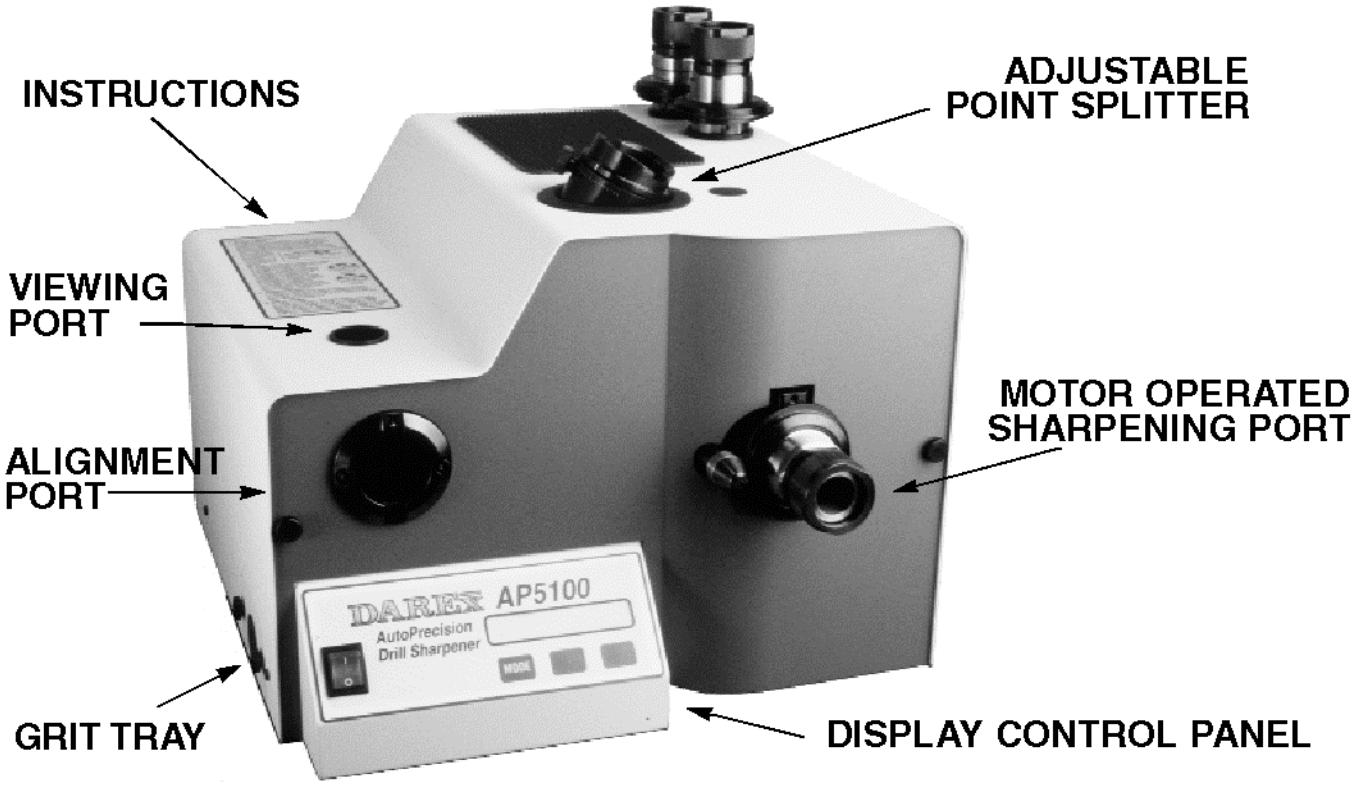
The AP5100 offers precision, speed and simplicity, with the ease and exactitude of microprocessor controls. This Darex sharpener is designed for shops with high volume drill bit sharpening needs. The semi-automatic alignment feature allows quick and accurate sharpening of drill bits ranging in size from 1/16 to 1" (1.5mm to 25mm). Each machine is equipped with a dedicated point angle of 118 or 135 degrees and is capable of point splitting.
With the standard electroplated CBN (Cubic Boron Nitride) grinding wheels, the AP5100 will sharpen high-speed steel, cobalt, parabolic, TiN, and other coated drill bits. Electroplated Diamond wheels are available to sharpen carbide drill bits. Both wheels will sharpen approximately 4,000 to 6,000 drill bits before replacement is required. To keep your Darex AP5100 in top condition, please refer to the maintenance section of this manual. Replacement wheels and parts are listed in the parts list on page 15 and 17. A schematic breakdown of the machine is on page 18 of the manual.

Table of Contents

*For Technical Service visit our web site at www.darex.com/technicalservice Or call Darex Corporation 800-547-0222

DAREX

AP5100 AUTO PRECISION DRILL SHARPENER



SPECIFICATIONS

Sharpen: Two flute twist drill bits SAE and metric with 118° OR 135° included point angles. HSS, cobalt, TiN coated, Parabolic and reduced shank drill bits.

Capacity: 1/16" to 1" (1.5mm - 25mm)

Accuracy: ANSI Standards

Wheels: 118° OR 135° wheel is standard on the AP-5100. To change the point angle you simply change the wheel. Wheels are super-abrasive and electro-plated, which do not require truing or dressing.

Cycle time: Typically a 1/16th (1.5mm) drill bit can be sharpened within 15 seconds and a 1" (25mm) will take up to 60 seconds. Material removal is adjustable.

Motor: 115 volt 3.2 amp 50/60 hz 3450 RPM, made in USA.

Operating ambient temperature: 40-95F (4-35C)

Machine dimensions: 18" x 17.500" x 12.500"

Packing dimensions: 23" x 22.625" x 19.750"

Weight: 102 lbs. (46 kg)

Shipping weight: 110 lbs. (50 kg)

THE BASIC CONCEPT OF YOUR DAREX AUTO PRECISION DRILL SHARPENER

Your AP5100 auto precision drill sharpener makes drill sharpening easy. The basic steps in sharpening a drill include:

ALIGNING THE DRILL
SHARPENING THE DRILL
SPLITTING THE DRILL POINT

Here are some of the innovative features and concepts that went into the design of your AP-5100:

1. PROGRAMMABLE ALIGNMENT:

The alignment process has a LCD readout. The operator can preset the relief grind and material removal amount with the touch of a button. Alignment is controlled pneumatically and with electrical stepper motors.

2. SHARPENING PORT - MOTOR OPERATED:

An electric motor rotates the drill in the sharpening process. Power grinding drills maintains consistency of grind from one drill bit to the next. Operator fatigue is reduced.

3. POINT SPLITTER:

New style adjustable point splitter is versatile. Innovative "DROP IN" style point splitter is very fast. Adjustable split angles from point split to web thin. The precision chucks: all three chucks are adjustable to fit your drills by turning of the chuck knobs (size range of each chuck is marked on the cam) 1/16" to 1" total size range. (1.5mm - 25mm)

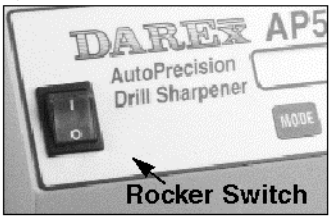
INSTRUCTIONS FOR SHARPENING DRILLS WITH YOUR NEW DAREX AUTO PRECISION DRILL SHARPENER

A VACUUM TUBE IS PROVIDED WITH THE MACHINE, WE STRONGLY RECOMMEND A VACUUM SYSTEM BE CONNECTED TO THIS UNIT WHEN IN USE! DUE TO THE GRINDING VOLUME THIS UNIT IS CAPABLE OF PRODUCING, A VACUUM SYSTEM WILL AID IN MAINTAINING A MUCH CLEANER, TROUBLE FREE SHARPENER.

Setting up for sharpening:

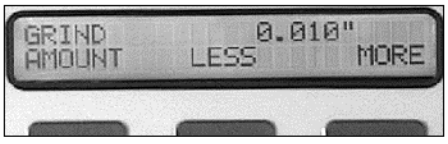
Attach air filter at rear of machine on the manifold. Install an air hose, (minimum 50 lb. pressure) to the air filter.

1. Turn the rocker switch on. A light in the switch will come on. The Liquid Crystal Display (LCD) will show, "**** CALIBRATING ****" on the screen. To set the LCD display to other languages and metric settings (See page (11) under "Machine Adjustments - Electrical"). The machine will go through the following movements: relief setting stepper motor orients to its preset location, and LCD will show either "Zero", or the number setting that was previously programmed in the relief mode. The alignment light goes on. The "Grind Amount stepper motor" will turn on and orient to .010", or the removal amount that was preset previously. The screen will display these various program cycles as the system is running its check process. Upon final calibration, the LCD panel will illustrate the settings on the machine and the start button readout will flash "START". The main grinding motor will not turn on at this time.



2. Push the "MODE" button once to bring up the first setting of the sharpener which is "Relief amount". This setting is for the relief angle or slope behind the cutting lips. The "0" setting will give approximately 4-6 degrees relief depending on the drill bit type. Each number to plus or minus does not necessarily add one degree of relief. Push the "MORE" button to increase the angle of relief or the "LESS" button to decrease the amount of relief. (See "Alignment Instructions" Page-7)

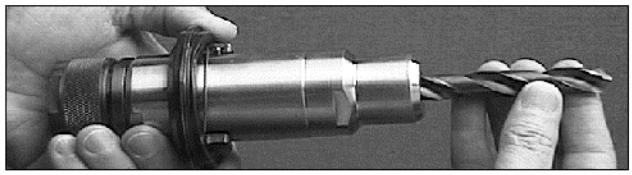
3. After the relief is set push the "MODE" button once to bring up the next setting which is "Grind Amount". This setting will set the amount of material to be removed from the tip of the drill bit. .010" being standard and .019" the maximum. Push the "MORE" button to increase material removal or the "LESS" button to lessen or decrease the amount of material removal. Very small drills about1/16" to 1/4" will only require about .005" material removal.



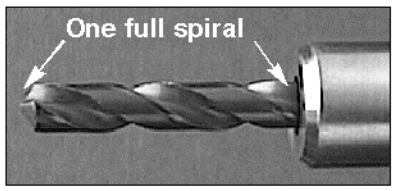
4. After the grind amount is set, push the "MODE" button once to bring up the next setting, which is, "Finish Passes". The purpose of this setting is to clean up the grind after the sharpening process. The "Finish Passes" mode may be preset to give any number that may be desired. The programmed standard number setting is one (1) pass. One item to consider is how much cycle speed is needed for your operation. If more drill bit sharpening volume is needed from the machine, then the finish passes can be reduced to increase production speed. Once the finish pass is set, the machine is now preset to proceed with the sharpening process.

Note: Once machine is turned off and then back on again the last settings that were made will appear on the LCD. If you wish to cancel them, you will see the word "RESET" on the right of the screen. Push the button below that and all of the numbers will go back to the standard settings.

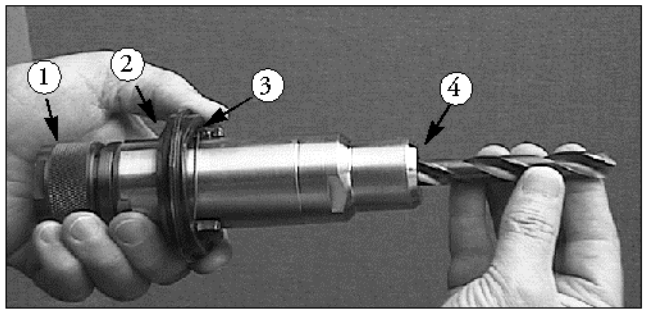
5. Insert the drill into the appropriate sized chuck, (sizes are marked on the cam). Rotate the chuck knob which opens and closes the chuck jaws onto the drill. Then slightly loosen the chuck jaws. To determine how tightly the drill should be held, the drill should be able to slide out when the chuck is held in a vertical position.



6. Hold the chuck in a horizontal position. Allow the drill to protrude at least one full spiral as shown. A full spiral is one full rotation of a "Margin". The margin is the raised spiral edge around a drill.



① Chuck Knob: By rotating the chuck knob, the jaws are opened and closed to accommodate drill size variation.
② Cams: Threaded onto the chuck, the cams produce the proper drill point grind needed to drill a correct hole. Also, retaining springs are mounted on the cams to allow the cam to properly lock and hold in the sharpening port.
③ Cam dogs: These tabs on the front of the cams are used for alignment purposes, to engage the sharpening port and also for locating in the point splitter.
④ Jaws: Holds the drill bit in place inside of the chuck.



7. Insert the chuck with the drill into the alignment tube. The cam dogs should bottom out against the alignment slots. Push the chuck in firmly enough for the cam to depress the small button located in the top alignment cam dog slot. This button activates the alignment pawls in the mechanism. Look through the viewing port and see if the drill is positioned correctly. (See illustrations below for the "correct" and "incorrect" method of proper drill setting) If positioned incorrectly, remove the chuck from the alignment port. Pull the drill out of the chuck as shown in Paragraph(5), page (5). Reinsert chuck in the port and realign as stated above. When the drill is

Correct **Incorrect**

positioned correctly tighten the chuck knob, then remove the chuck and drill from the alignment port.

8. Insert the chuck into the sharpening port, making sure the cam dogs go into the sharpening port slots. Note that the cam dogs have hooks on the edges. These hooks are to be engaged into the slots by rotating the chuck clockwise. The drill is now ready to be sharpened.

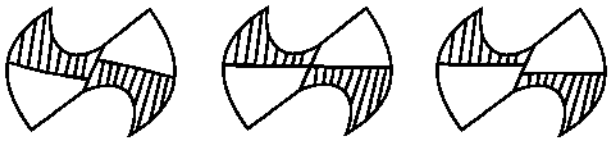
9. To start the grinding process, push the button under the readout that shows "Start". The main grinding motor and chuck rotating motor will now turn on. The unit will automatically go through the sharpening process that is programmed into the machine.
10. Once the machine stops rotating the drill, the sharpening port will disengage and move away from the wheel. Grasp the chuck and rotate it counterclockwise to unlock it from the sharpening port slots and pull the chuck toward you to remove it from the machine. The drill point has now been sharpened.
    Note: If you wish to split the point, do not remove the drill from the chuck.

SPLITTING THE POINT:

11. Upon removing the chuck from the sharpening port, "Do not loosen the drill in the chuck", insert the chuck into the splitting port on top of the machine. As the chuck slides down into the splitting port, slightly rotate it so that the cam dogs are guided into the slots. This process allows the chuck to go all of the way into the splitting port. While inserting the chuck into the point splitter, only allow it to go in slowly, so as to not damage the wheel or burn the drill point. In a second or so the grinding stops, pull the chuck approximately1/2" out of the splitting port, rotate it 180 degrees and then reinsert it back into the splitter to grind the opposite side.
    Note: Do not push or force the chuck into the splitting port or wheel damage will occur.

POINT SPLITTER DEPTH ADJUSTMENT:

If the drill is being split too much or split too little, the following adjustment is to be made: Loosen the point splitter lock knob. Inside the point splitter port the point splitter adjustment tube has notches in the bottom. To adjust the tube, use the provided wrench. Insert the end that has the small hole in it. Rotate the wrench CLOCKWISE if the drill is SPLIT TOO LITTLE. Rotate the wrench COUNTERCLOCKWISE if the drill is SPLIT TOO MUCH. A quarter turn of the point split adjustment tube will raise or lower it approximately .012" Locate the split angle to the desired setting and tighten the lock knob.



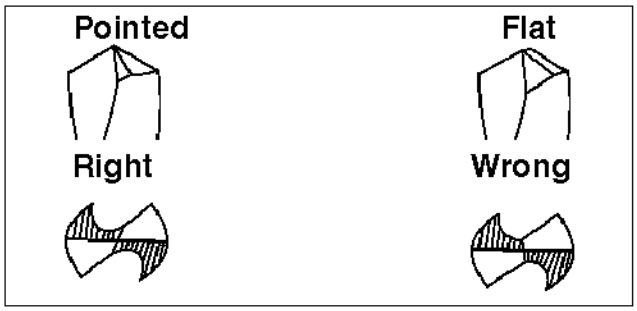
split too much **Correct** **split too little**

SETTING THE ADJUSTABLE POINT SPLITTER:

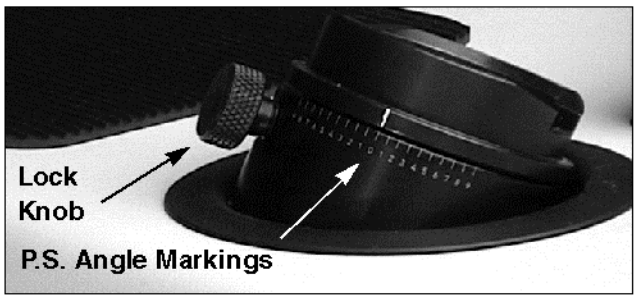
Depending on the type of drill, size of drill or point angle of the drill being sharpened and split, rotational split angle may be required. The point splitter has the capability of being changed so the split angle is in relation to the chisel angle, (The line across the center of the drill web).

A proper split angle can benefit the performance of the drill in several ways:

1. By increasing the rotation of the split angle, the split portion of the drill meets the cutting lip at a more obtuse angle which will give that area more strength and durability.
2. This added split angle creates a pointed profile at the very center of the drill which will give a very good centering affect and reduces drill point walking in the starting of a hole. (See illustration below)

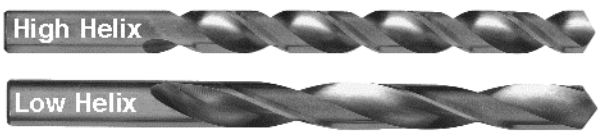


To adjust the point splitter, note the knurled knob at the side of the splitter. Loosen this lock knob and rotate the upper portion of the splitter clockwise. The amount of rotation will depend upon the chisel angle of the drill point, the split should be at least 5 degrees further clockwise than the chisel line. To make the first adjustment, rotate the splitter approximately one line clockwise. Split the drill point and see how the split angle looks. If the chisel line has not been eliminated, set the splitter tube one more line clockwise. (See illustration below)



ALIGNMENT INSTRUCTIONS:

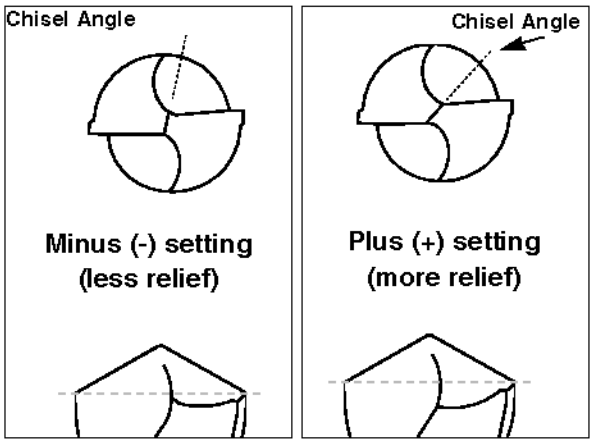
Your AP-5100 Auto precision machine is carefully adjusted at the factory. However, due to the style of drill, if the sharpener is not grinding your particular drill properly, the following should assist you to produce a correct point. Also, if you are using cobalt, parabolic or other specialty drills, alignment settings can generally be made to sharpen

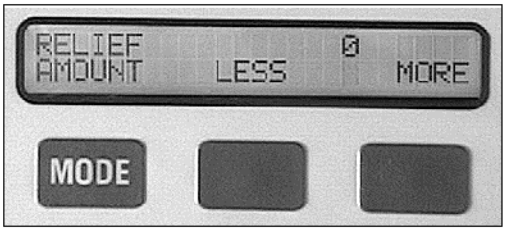


these types of tools.

Note: Before starting the alignment process, you can reduce the alignment set up time by sorting your drill bits into groups of the same diameters. Then, sort each common diameter group into smaller groups of the same helix style, flute width and web thickness. Align and sharpen, these groups in order, from smallest diameter to largest diameter.

Adjustments to increase or decrease the relief are illustrated below. Push the mode button until * RELIEF AMOUNT* is shown on the screen. Push the Less or More button for changing relief to the amount desired.





Note:

Relief settings: The numbers shown on the display screen are not the specific relief angle that will be applied to the drill point. They are reference figures only. When the machine is showing "0" on the display, the drill will produce approximately 4 to 6 degrees depending on the drill style, size and point angle.

HELIX vs RELIEF:

Depending on the helix (twist angle) of your drill (See Illustration), you may want to set the relief to a different number to acquire a proper relief. The following alignment settings are suggested starting points. Several experimental grinds may be needed to achieve the correct relief. For low helix drill of 1/2" size, set number to "Plus 11", for low helix size drill around 3/16", set the number to about "Plus 12". The high helix drill of about 1/2" size requires a setting of about "Minus 5", high helix drill of about 3/16" size about "Minus 4". Cobalt drills have a thick web and narrower flute and require a setting to the minus side several numbers. Parabolic drills that have wider flutes in relation to the land and margin may require a one or two number setting toward the plus side. The alignment settings will differ in relation to the sizes of these types of drills.

Small drill: Small drills of about 1/8" size may have too much relief, resulting in an excessive chisel angle which makes a flat appearing point and in turn walks too much in the drilling process. To correct this problem set the alignment to a lesser relief setting on the minus side. Small drill bits do not dissipate the heat well, set the material removal to the least amount needed to avoid burning or chattering, then sharpen the drill bit. Chattering can also be the result of too much material removal.

DIAMETER vs RELIEF:

A major advantage in the design of the Darex standard chuck and cam is convenience, it is appropriate for the greatest number of drill bit diameters and geometries. However, as a result of that convenience, the standard chuck cam may not produce optimal relief for every drill bit. When using the standard chuck cam on the 5/8-1" chuck, creating a 118-degree point, there may be less relief angle than produced with the smaller diameter ranged chucks. We offer an Alternate Relief Cam (Part # SA10645TA) which produces additional relief on larger diameter drill bits. Although it is not normally necessary, this cam may be used on any of the other standard chucks.

*When you add relief to a drill bit you change the degree of the point angle.

Hole size: If your holes are oversize, reduce the relief. In the relief mode setting, enter numbers of about minus 1 or 2 which will give you a minimal relief of around 2 to 4 degrees. This will result in less than standard factory relief and produce closer hole tolerances.

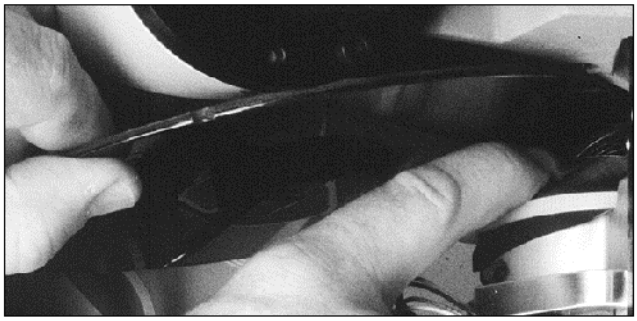
POINT ANGLE vs RELIEF:

Because the 118-degree point angle is steeper, the machine will require that more relief be added. You may notice the point angle changes a small amount as the relief is increased, which is a common result of a cam generated drill grinder.

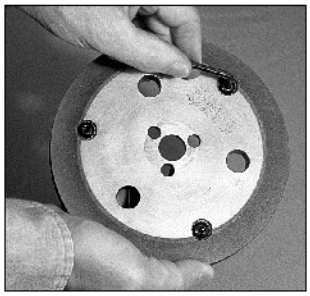
CHANGING THE WHEELS:

Pull the electrical power plug! Remove the two thumb screws from the front cover plate. Pull the plate forward to remove and expose the inside wheel cover plate. Loosen and

remove the three thumb screws that hold the wheel cover plate onto the wheel housing. Grasp the handle in the middle of the cover plate with the left hand and with the right index finger pull the bellows seal away from the plate. Pull



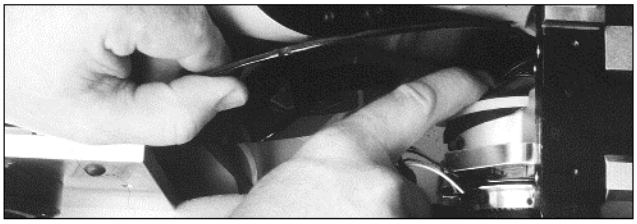
the cover to the left and away from the machine to expose the grinding wheels. Using a hex wrench remove the three center screws from the front grinding wheel.
Inspect the wheels for abrasive remaining. Worn wheels will appear smooth at the outer edge. Remove the sharpening wheel from the point split wheel by removing three screws. The split point wheel life may be doubled by simply reversing it. If necessary, replace the worn wheel(s). New wheels will produce a coarser grind. However, the grind will become smoother after the first one hundred drill bit sharpenings. You should experience many thousands of drill bit sharpenings from each new wheel depending on the amount of material being removed.



Place the wheels back on the hub, making sure to clean the wheel center and hub of any grindings. Be sure wheel sets flat on the hub and gradually tighten the screws. Move from screw to screw in an alternating pattern. Tighten each screw a quarter turn until all screws are completely tight.When tightening wheel bolts, after replacing or adjusting wheel, use torque specifications of 40 to 45 inch pounds on each wheel bolt.

Important: After tightening the screws, hold the bellows seal away from the wheel and rotate the wheel by hand to make sure it runs true. If it does not run true remove the wheel and check for burrs on the hub and wheel or grit between the wheel and hub.

Replace the wheel cover: Pull the bellows seal toward you at the sharpening port, then insert the cover plate into position. Reinstall the three thumb screws and tighten. Reinstall the machine front cover and tighten the two thumb screws. Verify the material removal amount is still calibrated correctly. Measure the length of your drill bit before you sharpen it and again after the sharpening process is completed. The length of the bit should be reduced by the grind amount the unit was set to remove. To re-calibrate see MATERIAL REMOVAL ADJUSTMENT-INFEED BLOCK on page 9. The swing cam follower cone may need adjusted, see "To Adjust" page (9).



Note: The standard wheels on this machine are CBN(Borazon) for grinding high speed steel or cobalt drills:

Standard Grinding Wheel:
(118° CBN) Part # PP02110GF OR
(135° CBN) Part # PP02115GF
Standard Point Split Wheel:
(CBN) Part # PP02120GF
Optional Diamond Wheel Available

IMPORTANT:

Do not attempt to grind carbide drills with CBN wheels. Diamond wheels are available if carbide drills are to be sharpened and split on this machine. No dressing of these wheels is necessary. If a buildup appears on the wheels, use brake/electrical spray can cleaner to remove any deposits from the surface of the wheels. Do not use any type of dressing tool on these wheels or damage to the abrasive surface will occur and greatly shorten wheel life. To acquire new wheels contact your local distributor or Darex Corporation.

MACHINE ADJUSTMENTS (Mechanical) AND TROUBLE SHOOTING

POINT SPLITTER:

CENTERING THE POINT SPLITTER: If the split of the drill is not quite into the chisel line, (The line across the center of the drill), then the point splitter tube will need to be adjusted. The top cover is to be removed prior to adjustment.

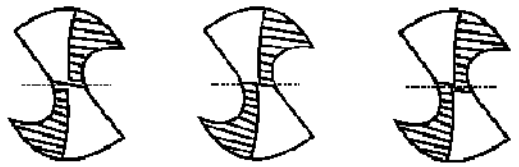
REMOVING THE TOP AND FRONT COVER:

Unplug the machine!

Turn off air supply to machine. (Remove the air filter and fitting from the filter mounting block.) Loosen and remove the two thumbscrews from the front cover plate and remove it from the machine. Unscrew and remove the point splitter lock knob. Loosen and remove the (6) six screws from around the base of the top cover. Lift the top cover straight up and off of the base of the machine. Reinstall the point splitter lock knob. Make sure the splitter stop tube is set as before and tighten.

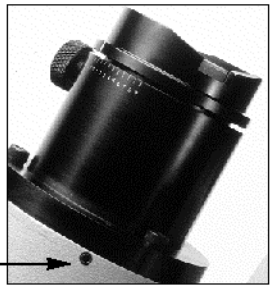
Centering the point splitter: Grind a drill and split one side to see how much the splitter needs to be moved for grinding to the chisel line.

(See illustrations below)



Loosen the 3 (three) holding screws at the flange of the point splitter adjustment tube. Note the location of the center marks on the tube. If the drill point is "under split" as shown on the illustration above, the tube is to be moved toward the front of the machine. The opposite is to be done if the drill bit is "over split".

Move the point splitter adjustment tube a very small amount, pulling it toward the front of the machine with one hand while turning the small adjustment screw located on the front of the splitter, then tighten the holding screws. Regrind and split the drill to check the newly adjusted setting. Continue the resetting of the adjustment tube until the drill is properly split. Reinstall the top cover in the reverse of how it was removed.



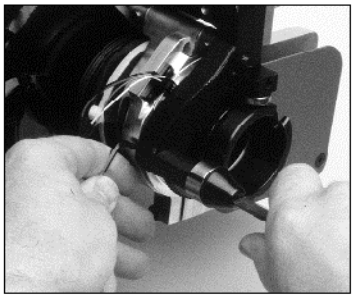
SHARPENING FIXTURE:

SWING CAM FOLLOWER CONE:

If the drill point appears to have a helical on the tip, or the chisel line is not correct for the relative amount of relief on the drill, perform the following: The swing cam follower cone may be out of adjustment. Make an adjustment to the specific setting as noted below.

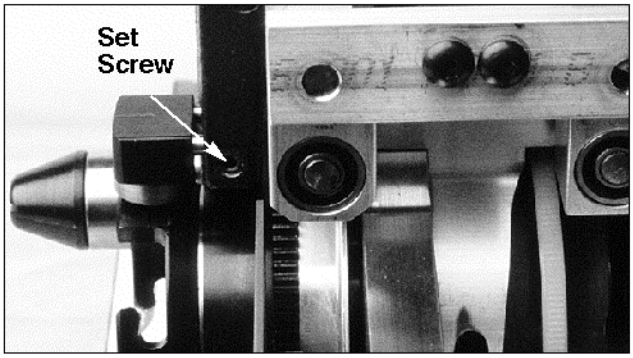
To adjust: Using a felt tip pen, mark a line at 12:00 o'clock on the top edge of the cone next to the bearing. Insert a hex wrench in the screw head and loosen the screw so the cone can be rotated. Rotate the cone, which is an eccentric (off center), slightly counterclockwise about 1/8", then tighten the hex head screw. If the cone eccentric is in the lower (off center) setting, then it will need to be rotated clockwise instead of counterclockwise. Depending on the cone eccentric location, make sure that while rotating of the cone, the bearing moves away from the sharpening port. This adjustment eliminates the helical and increases relief on the drill point. Grind a drill and see if the helical is eliminated or the grind is producing enough relief. If not, then loosen the cone and rotate it a slight amount more approximately 1/8" counter clockwise.

Note: Always recalibrate and/or verify the Grind Amount/Material Removal after adjusting the Swing Cam Follower Cone. (See "MATERIAL REMOVAL ADJUSTMENT INFEED BLOCK" below.)



MATERIAL REMOVAL ADJUSTMENT INFEED BLOCK:

If the infeed bearing and block become out of adjustment in relation to the factory setting, the results being an incorrect amount of material removal from what the LCD readout shows, the following resetting procedure may be made: Remove the front and main covers. Loosen the hex head set screw located at the right side of the support bar casting. Hold a straight edge across the face of the chuck tube, move the infeed bearing/block so it is flush with the straight edge and tighten the hex head set screw. Now, grind a drill bit to check to see if the material removal is the same as the readout shows. If a finer adjustment needs to be made at this stage, install a dial indicator with a magnetic base on the front face of the machine base. Touch the dial indicator to the bearing/block. Adjust the block in or out the amount needed for calibrating the drill point removal to coincide with the LCD readout.



SHARPENING PORT:

When sharpening a drill and no grinding occurs, the sharpening port may not be traversing to the front and rear of the machine in the sharpening process. The following may be the cause:

A. If the air pressure is not at 50 lb. or more it may not have enough pressure to activate the air cylinder. (Increase air pressure to 50 lb. or more.)
B. The air cylinder may not be getting an air supply from the electric solenoid that is connected to the manifold. Check the solenoid and make sure it is activating upon receiving electrical contact. After removing the top cover, push the red button on top of the solenoid to activate it manually to see if it is functioning.
C. The cylinder speed control valves attached at each end of the air cylinder may be obstructed by particles or moisture. To remove hoses: press in on speed control valve to release and extract tubing. (See photo #1) Unscrew these valves from the air cylinder. Disassemble them and make sure the small air ports are clear. (See photo #2) If the speed of the cylinder rods does not appear to be as before, an adjustment may be needed.

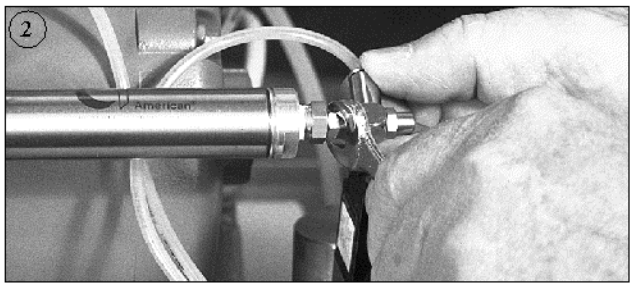
ADJUSTMENT OF CYLINDER SPEED CONTROL VALVES:

Sharpening port speed control valve adjustment: If the sharpening port appears to move too fast or slow forward and /or rearward, then the valve speed control screws will need to be adjusted. The cylinder rod speed is controlled by the air exhaust rate rather than the basic pressure on the piston. The valve at the rear or end of the cylinder controls the speed of the rods rearward motion or rod motion going into the cylinder. To change the speed of the rod going into the cylinder toward the rear of the machine, perform the following: turn the screw on the valve at the rear, or unmounted end of the cylinder all the way in or clockwise for a zero point. Turn the screw counterclockwise an amount of about 1-1/2 turns. This would be a starting place for adjusting the speed of the cylinder on the alignment unit. Make 2 turns counterclockwise to open — for the sharpening port. If the speed needs to be increased more, then unscrew the adjustment screw another 1/4 turn counter clockwise, then check the speed again. The speed will need to be approximately one second one way and one second the other direction for the alignment cylinder.

TO REMOVE SHARPENING ASSEMBLY:

Unplug the machine.

A. Remove the front and top cover as described on page (9), the paragraph titled "POINT SPLITTER".
B. Separate the wire connector that goes to the sharpening port motor.
C. Separate the wire connector that goes to the optical sensor located next to the sharpening port.



D. Unplug the two air hoses at the air cylinder speed control valves as described in the paragraph on this page titled, "SHARPENING PORT". (See photo #1)
E. Pull the complete assembly straight down approximately 5/8", and away from the grinding motor to remove it from the motor wheel guard casting. The air hoses and fittings are color coded to allow correct reassembly.

ALIGNMENT:

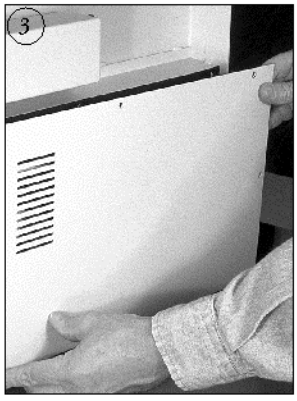
LACK OF MOVEMENT IN ALIGNMENT SYSTEM:

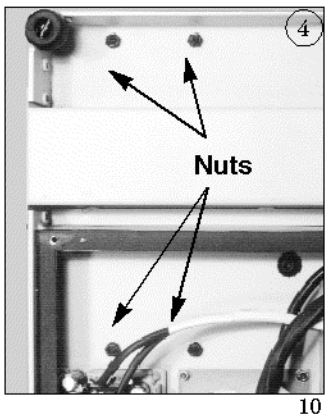
If the alignment system does not move while programming the relief setting check the following. Remove the main cover and look inside the alignment housing extrusion for any obstructions such as broken drill pieces or any items that may have fallen into the unit.

TO REMOVE ALIGNMENT ASSEMBLY:

Unplug the machine.

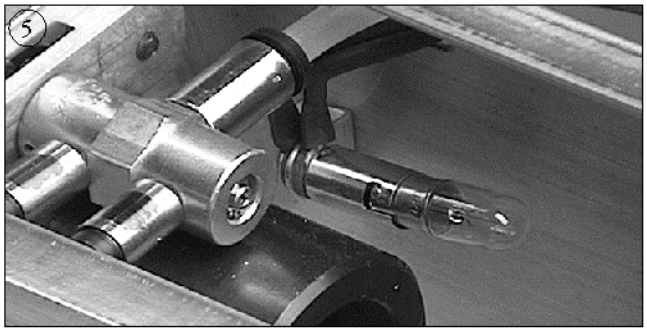
A. Remove the front cover and top cover (Page (9), paragraph titled "POINT SPLITTER".
B. Separate the electrical connectors that go to the two stepper motors that are mounted at the rear plate of the alignment assembly.
C. Separate the electrical connector that goes to the alignment light.
D. Unplug the two air hoses at the air cylinder speed control valves as described on this page, in paragraph titled "SHARPENING PORT". (See photo # 1)
E. Set the complete sharpener on its back to access the bottom cover.
F. Remove the 8 screws holding the bottom plate on the base of the sharpener and remove the bottom cover plate, (See photo #3 below). Four 3/8" self locking nuts will be visible that are directly below the alignment assembly, (See photo #4 below). While holding on to the alignment assembly to prevent it from falling, unscrew and remove the nuts and pull the complete alignment assembly away from the base of the unit. The electrical connectors cannot crossconnect and the air hoses and fittings are all color coded so as to provide correct reassembly of the unit.





MACHINE ADJUSTMENTS (Electrical) AND TROUBLE SHOOTING

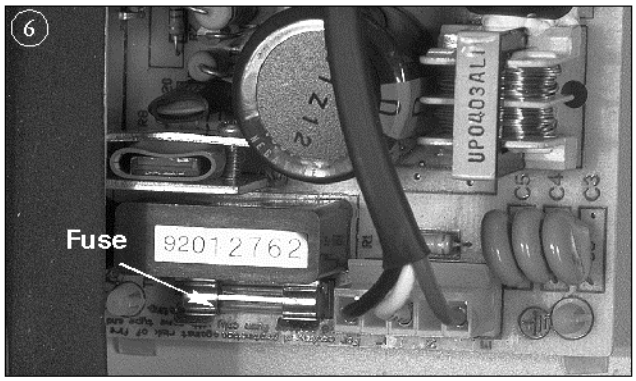
ALIGNMENT LIGHT NOT ON: When the machine is turned on and the alignment light does not come on, however the LCD is still on, the alignment bulb is burned out. Remove the main cover of the machine to access the alignment bulb. The bulb is located inside of the alignment housing extrusion. (See photo #5 below) Remove the bulb to see if the filament is burned out. For replacement, the bulb is 13 volt - 3.8 watt (Part # PP10294EF).

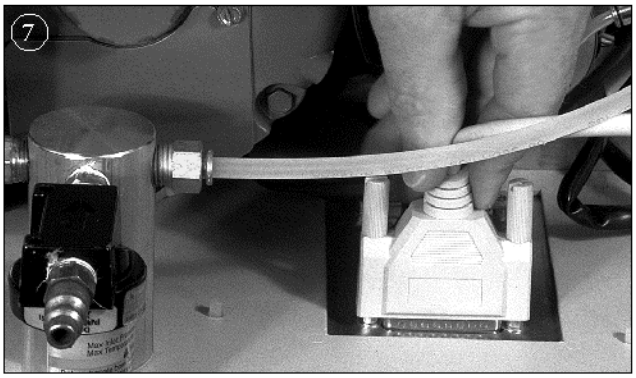


LCD DISPLAY NOT LIGHTING:

If LCD (Liquid Crystal Display) does not illuminate when rocker switch is turned on, check the following:

A. Make sure electrical supply is on and unit is plugged in.
B. Check the power supply fuse to see if it is blown. (Small glass 2 Amp) To access this fuse the bottom cover needs to be removed. It is located at the rear left side of the machine as you're facing the unit. (See photo #6 below) For replacement, the fuse is a "2 Amp 250 Volt GMA" and is mounted on the power supply circuit board. If the fuse is good:
C. Remove the main cover and check the electrical plugs that go to the circuit board receptacles, move them around to make sure that they are making good electrical contact. (See photo #7 below)

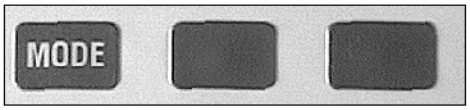




LIQUID CRYSTAL DISPLAY LANGUAGE AND METRIC SETTINGS:

To change the display to different languages and metric settings proceed with the following. To set the readout to the language and measurement type do the following: Prior to turning machine on press and hold the appropriate (" ♪ ") button or buttons down while turning the on/off switch to ON. Once the display lights up, release the buttons.
Note: If the information on the screen comes up illegible, the unit did not receive the command properly. To correct it, turn the machine off and try the procedure again, it should then process properly.

FRONT PANEL BUTTONS:

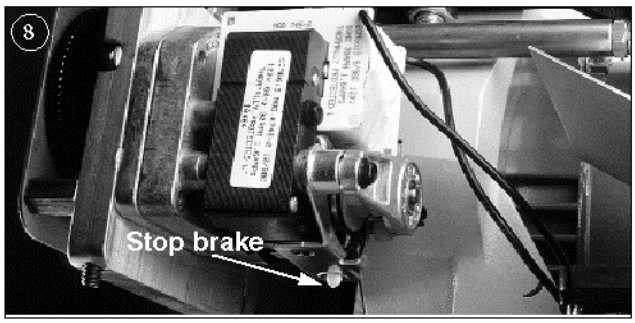


		♪	English
	♪		English Metric
	♪	♪	Japanese Metric
♪			German Metric
♪		♪	Spanish Metric
♪	♪		French Metric
			(open)

MACHINE SHUTS DOWN ALL ELECTRICAL ITEMS:

Machine motors quit, LCD blacks out, light in alignment goes out. The above description indicates that the main internal fuse has blown and has shut off the main power within the unit. Check the following areas that may have been the source of the fuse blowing.
Unplug the machine:

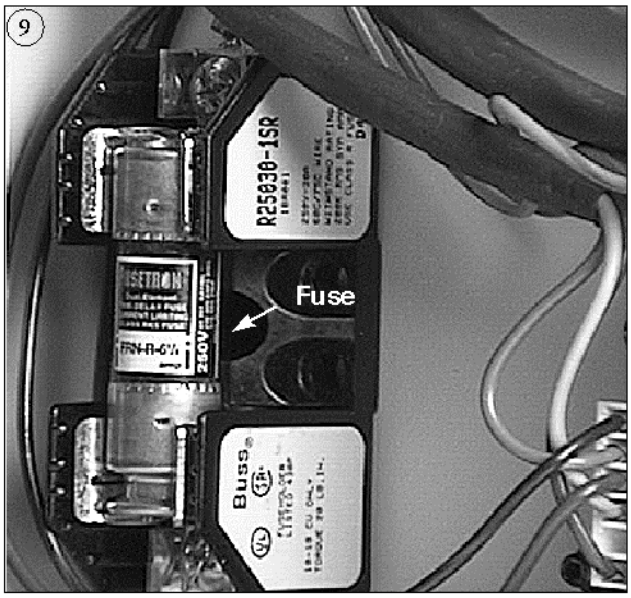
A. Make sure the wheels rotate freely by removing the grit tray, reach up under the grit tray opening and turn the grinding wheels to make sure they are rotating freely.
B. Remove the main machine cover and check the chuck tube rotating motor to see if it moves freely. There is a stop brake under the rear of the chuck tube motor which is a lever, (See photo #8 below). It must be lifted up and held to free the stop brake on the motor prior to attempting to rotate the motor shaft. Now, turn the tube and gears to check and see if they rotate freely.
C. Rotate the alignment stepper motors by pushing on the gears to make sure they move freely.



TO LOCATE THE MAIN FUSE:
The main fuse is positioned in the location described below.

Location - A:

1. Unplug the machine from all electrical connections.
2. Grab under the right edge of machine and tip the complete unit up with the alignment side down on the bench. This will expose the underside of the machine.
3. There is a full width plate under the rear of half of the unit that is held down with eight (8) Phillips head screws. Remove these screws and the plate.
4. The fuse that is in the fuse holder is 2" x 1/2" (See Photo #9 below) and can be removed with a screwdriver and/or a pair of pliers. (The fuse holder has very stiff holding prongs.)



Installation - B:

5. Once the fuse is removed - reinsert the new fuse in its place. The fuse is a:
   Bussman Fusetron-Dual Element
   FRN-R-6 1/4 Amp, 250 v)
   (Part # PP10016EF)

   Note: There is a groove on one end of the fuse. This groove will go toward the end of the fuse holder that is labeled "BUSS". (See photo #9 above)

6. After inserting the fuse, reinstall the bottom plate and screws. Set the machine back onto the bench.

7. Insert a long stick or object into the sharpening port and make sure that the grinding wheel moves without any restriction. If the grinding wheel does not rotate easily then remove the front cover of the machine and also the wheel cover to find the reason that the wheel does not turn easily.

8. If the wheel turns easily then plug the machine in and flip the main rocker switch on. Check to see if the unit goes through its calibration mode. Now go ahead and grind a drill.

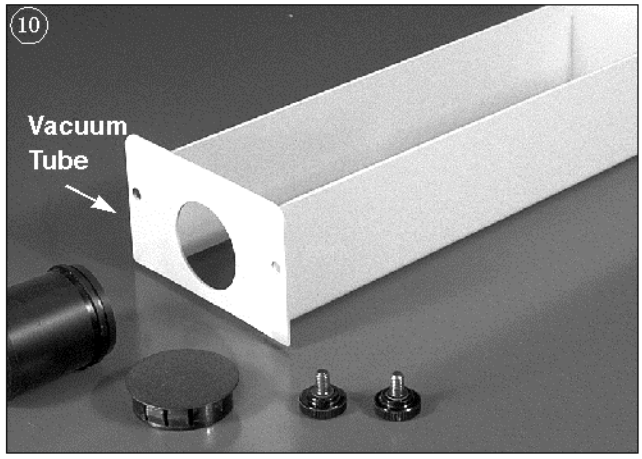
9. If in the start up of the machine, the fuse is blown again, then call 1-800-547-0222 and ask for Darex Technical Service.

AP-5100 CLEANING MAINTENANCE INSTRUCTIONS

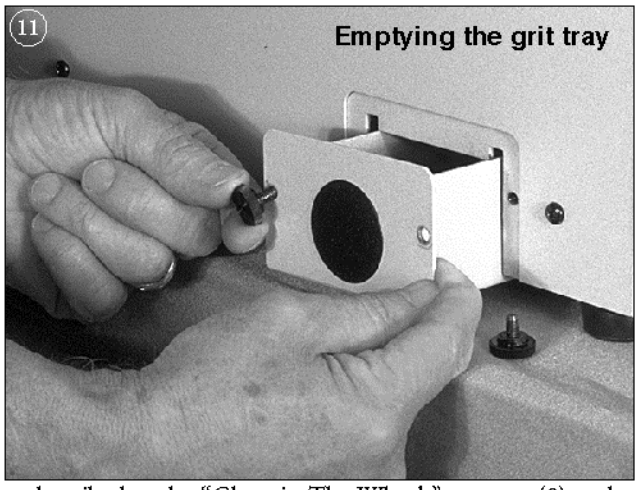
PERIODIC CLEANING OF VARIOUS AREAS OF THIS UNIT IS VERY IMPORTANT TO INSURE A PROPERLY OPERATIONAL MACHINE.

VACUUM SYSTEM:
Note: A VACUUM TUBE IS PROVIDED WITH THE MACHINE, WE STRONGLY RECOMMEND A VACUUM SYSTEM BE CONNECTED TO THIS UNIT WHEN IN USE! DUE TO THE GRINDING VOLUME THIS UNIT IS CAPABLE OF PRODUCING, A VACUUM SYSTEM WILL AID IN MAINTAINING A MUCH CLEANER, TROUBLE FREE SHARPENER.

To install: Push plug out of tray. Take the furnished tube, insert & snap into place. (See photo #10)



GRIT TRAY: As you use your sharpener, grinding particles will accumulate inside the grit tray. The grit tray has a magnetic liner to attract and hold these particles. To remove the tray remove the thumb screws. Remove tray and scrape or wipe out the contents. Remove and clean the grit tray often enough so as not to allow it to become more than 30 to 40% full. When in the process of cleaning the grit tray, if time permits, remove the front cover plate and wheel cover



as described under "Changin The Wheels" on page (8) and with a dry brush remove any visible grinding buildup from around the wheel housing and below, around where the grit tray opening is located.

IMPORTANT NOTE: (Grinding Particles): Due to the amount of grinding particles that this machine is capable of producing, these particles can periodically accumulate in the chuck tube and create wear between the chucks and the chuck tube. This potential wear can initiate an off center grinding process within the machine. To eliminate this from occurring, along with the use of a vaccum system, please make sure to follow the procedures in the next paragraph!

CHUCK TUBE:

With machine powered down, blow out and/or wipe inside of sharpening chuck tube with a dry cloth to remove grinding particles on a regular basis. No lubrication is needed inside the chuck tube. Grinding particles will collect in the pockets, restricting necessary forward travel of the sharpening fixture. Routinely, pull back the bellow seal, located behind the sharpening tube and remove any grit build up.

POINT SPLITTER:

Look down the port of the point splitter and if a certain amount of grindings are apparent, with machine powered down, blow out and/or wipe inside of point split tube with a dry cloth to remove grinding particles. Every few months take the front and top cover off of the unit, unscrew the three hex cap screws, lift the point splitter-complete housing off of the wheel casting. Take a dry brush and sweep any excess grindings away from the top of the wheel housing and off of the point splitter unit. Reinstall the point splitter as it was removed. Be sure to push it toward the front of the machine noting that it is touching the adjustment set screw. This will locate it in its original position. Tighten the cap screws that hold it down.

WHEELS:

The machine contains two wheels, the main grinding wheel, 118-degree CBN OR 135-degree CBN, and a CBN point splitting wheel. These wheels are maintenance free. (No truing or dressing is required) However, the wheels should be cleaned on a regular basis. No less than once a month is suggested. After removing the wheel from the unit, saturate the wheel with any type of OIL-LESS SOLVENT, such as Automotive Brake Cleaner. If you wish to, you can use a soft bristle brush and lightly brush the saturated wheel loosening the impacted grinding particles. Re-saturate the wheel to flush out any loosened debris. If any blackening or burning of the drill tip appears on the drill point, in either the sharpening process or the point splitting process, on a newly cleaned wheel, one or both of the wheels may need to be changed. The point splitting wheel can be reversed which will produce twice the life from that wheel.
(See page (8) for wheel changes)

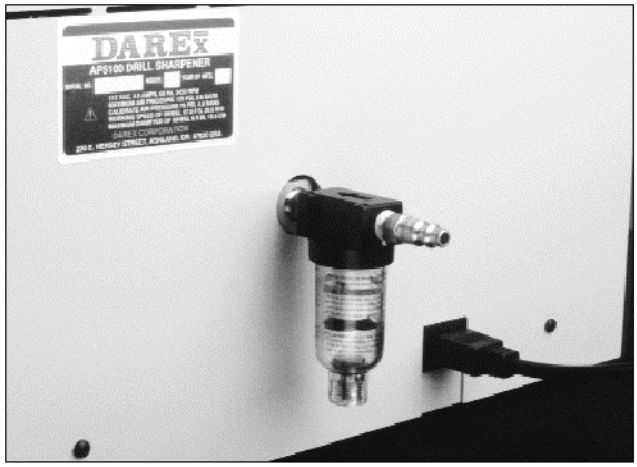
Note: When grinding small drill bits of approximately 1/8" diameter, they may tend to burn on the tips. Lessen the amount of material removal on the initial grind amount setting. These small drills don't dissipate the heat as well as larger ones, so less material removal is suggested.

MAIN MACHINE COVER:

Cleaning underneath: every couple of months the front cover and main machine covers should be removed from the machine and any grinding residue removed from the working components. Brush or vacuum from around the electrical plugs and sockets, crevices, and any other areas that have collected grinding particles.

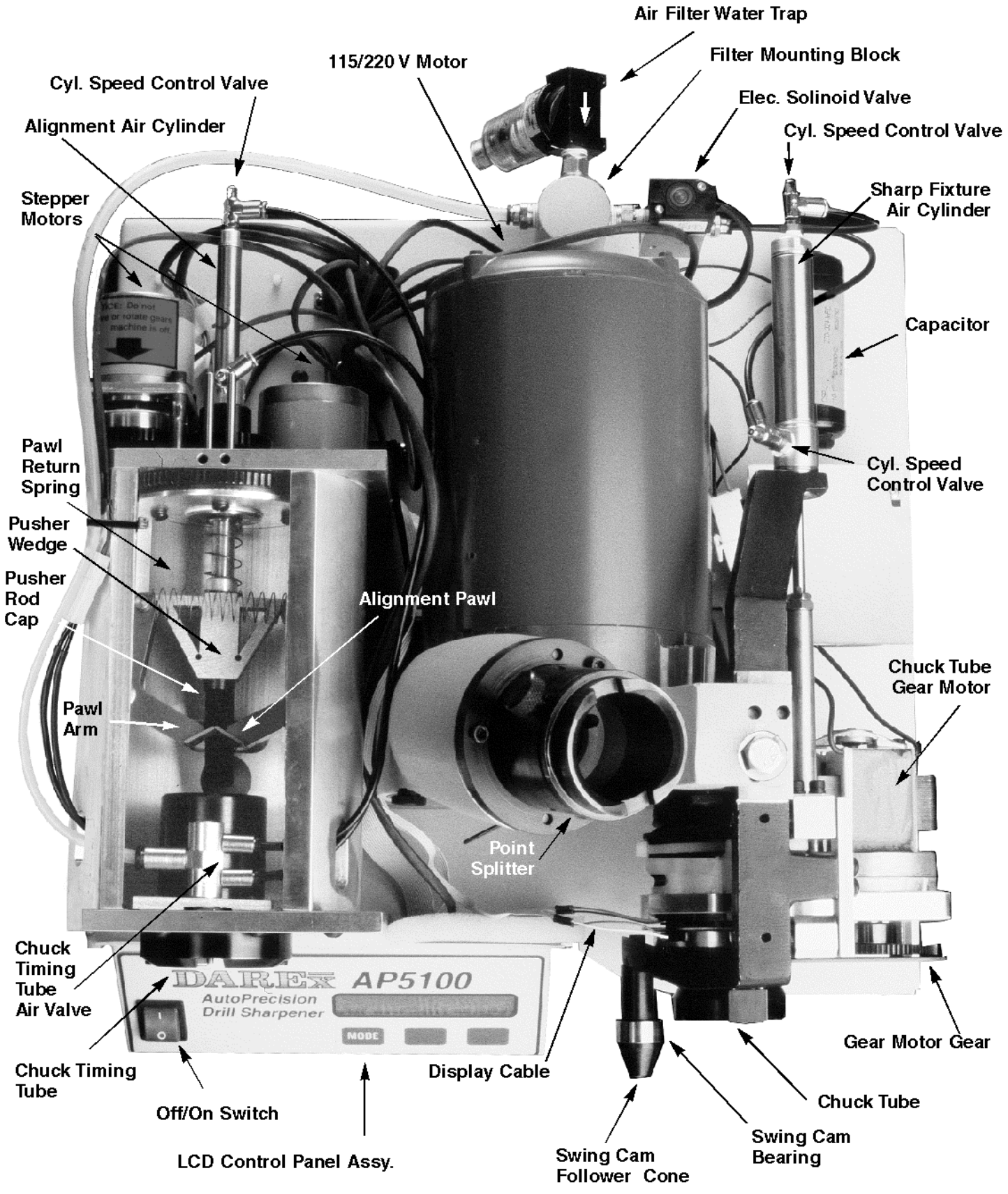
AIR FILTER:

The filter on the rear of this unit serves a dual purpose. It filters solid particles from the compressed air and it also removes any excess water that may be in the air system. The bottom of the bowl has an air valve much like a car tire valve. To remove the water from the bowl of the filter, hold a rag below the bowl, then merely reach under the bowl with a finger and push up on the valve stem to blow the water from the bowl into the rag. To change the filter cartridge, first turn the air off. Depressurize the bowl by pushing on the valve stem on the bottom. Unscrew the bowl from the filter frame. Unscrew the black plastic piece at the bottom of the element and remove the filter element from the plastic piece. Insert new filter cartridge. To re-assemble, reverse steps mentioned in this paragraph.



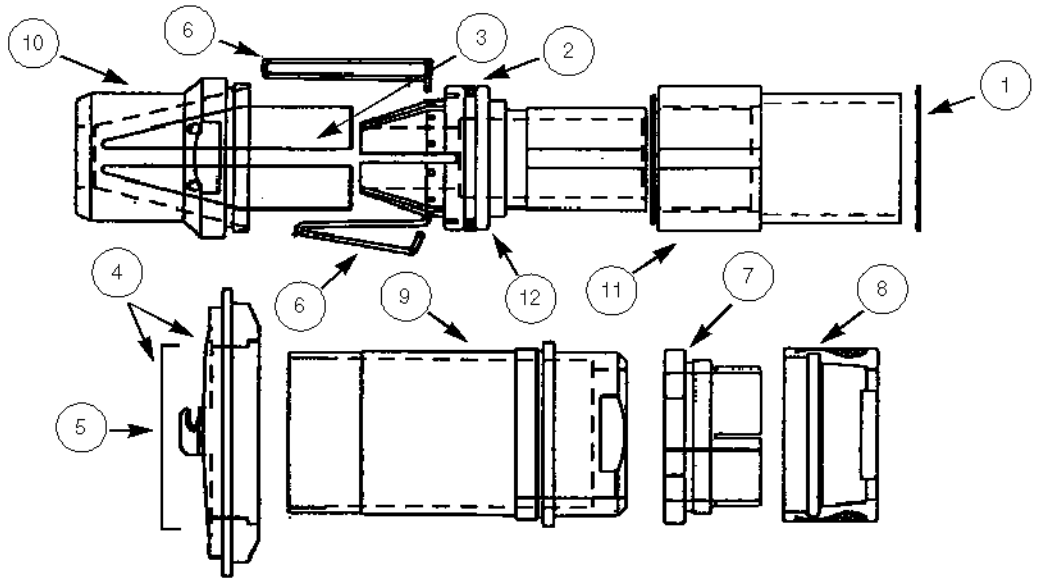
NOTES

AP5100 Top View (Top Cover Removed)



DAREX AP5100 CHUCK PARTS LIST

# ON DWG	PART #	DESCRIPTION	# ON DWG	PART #	DESCRIPTION
1	PP02404SF	1/4", 5/8", & 1" THRUST WASHER (ALL CHUCKS)	10	PP02400TF	1/4" CHUCK NOSE
2	PP03640NF	CHUCK FELT SEAL (ALL CHUCKS)	10	PP02420TF	5/8" CHUCK NOSE
3	SA02415SA	1/4" CHUCK JAWS (4)	10	PP02440TF	1" CHUCK NOSE
3	SA02425SA	5/8" CHUCK JAWS (6)	11	PP02401TF	1/4" CHUCK SLEEVE
3	SA02452SA	1" CHUCK JAWS (10)	11	PP02421TF	5/8" CHUCK SLEEVE
4	SA10602TA	1/16-1/4 CAMS/SPRINGS	11	PP02441TF	1" CHUCK SLEEVE
4	SA10622TA	1/4-5/8 CAMS/SPRINGS	12	PP02402TF	1/4" CLOSING SCREW
4	SA10642TA	5/8-1" CAMS/SPRINGS	12	PP02422TF	5/8" CLOSING SCREW
4	SA10645TA	ALT. RELIEF CAM/SPRINGS	12	PP02442TF	1" CLOSING SCREW
4	SA10605TA	1/16-1/4 LEFT HAND CAM/SPRINGS	NOT SHOWN	SA10600TA	1/16"-1/4" "SPLIT POINT" CHUCK COMPLETE
4	SA10625TA	1/4-5/8 LEFT HAND CAM/SPRINGS	NOT SHOWN	SA10620TA	1/4"- 5/8" "SPLIT POINT" CHUCK COMPLETE
5	PP10650RF	CHUCK COMPRESSION SPRING (ALL CHUCKS)	NOT SHOWN	SA10640TA	5/8"- 1" "SPLIT POINT" CHUCK COMPLETE
6	SA03520RA	1/4" CHUCK JAW SPRINGS (4)	NOT SHOWN	SA10604TA	1/16"-1/4" LH "SPLIT POINT" CHUCK COMPLETE
6	SA02421RA	5/8" CHUCK JAW SPRINGS (6)	NOT SHOWN	SA10624TA	1/4"- 5/8" LH "SPLIT POINT" CHUCK COMPLETE
6	SA02450RA	1" CHUCK JAW SPRINGS (10)	NOT SHOWN	SA10606TA	1/16"-1/4" "SPLIT POINT" MORSE TAPER #1 CHUCK COMPLETE
7	PP02444TF	CHUCK KNOB COLLET	NOT SHOWN	SA10626TA	1/4"-5/8" "SPLIT POINT" MORSE TAPER #2 CHUCK COMPLETE
8	PP02446TF	KNURLED CHUCK KNOB	NOT SHOWN	SA02604TA	1/16"-1/4" CHUCK - MORSE TAPER #1 - NO CAM
9	SA02405TA	1/4" CHUCK BODY/KEY	NOT SHOWN	SA02624TA	1/4"- 5/8" CHUCK - MORSE TAPER #2 - NO CAM
9	SA02405TA	5/8" CHUCK BODY/KEY	NOT SHOWN	SA02602TA	1/16"-1/4" CHUCK - NO CAM
9	SA02445TA	1" CHUCK BODY/KEY	NOT SHOWN	SA02622TA	1/4"- 5/8" CHUCK - NO CAM
			NOT SHOWN	SA02642TA	5/8"- 1" CHUCK - NO CAM



AP5100 CHUCK MAINTENANCE & GUIDE

A routine cleaning and maintenance program for the chucks is recommended. This will help provide a normal life cycle for the chucks and help achieve and maintain the grinding specifications set by the Machine Tool Industry.

DISASSEMBLY:

Install chuck knob flats (A) in a vise. Set wrench jaws on the collet flats, (B) and loosen about ¼ to ½ turn. Then pull chuck out of the knob. Next, install the end of the chuck body in the vise, on the flats(C). Put a wrench on the flats near the nose, loosen and unscrew nose from the body. To remove the closing screw from the sleeve, lay the chuck in the palm of your hand, turn the sleeve; at the knob end of the chuck, clockwise, In the process, the closing screw will exit out of the front of the chuck.

Note: Key way slot on the sleeve and closing screw must first be aligned with the key welded to the inside of the chuck body. If not aligned, the key cannot travel through the milled slots of the sleeve and closing screw. Removal of internal parts will be unsuccessful, as the closing screw ledge will be stopped by the bottom of the key. As jaws are removed from the closing screw, they must be marked in their respective location, so as to go back in the same slots. After all chuck parts are disassembled, clean all metal parts with an oil-less solvent, such as automotive brake/electrical cleaner. A small brass brush aids this cleaning process. Prior to re-assembly, apply CRC technical grade 3-36 lubricant #03003 to the Delrin closing screw threads. If this product can't be located locally, call CRC at 800-272-4620, they can inform you of a local supplier of this product. Apply a very small amount of this lubricant to the closing screw threads only. Coat the threads by threading the sleeve up and down the closing screw, after applying the lubricant.

TO REMOVE CAMS FROM THE CHUCK:

First, using needle nose pliers, pull the compression springs out of the cams. Insert the chuck into the alignment tube. Place the chuck wrench on the body flats (C), rotate the wrench counterclockwise to loosen the cam, unscrew, and remove.

RE-ASSEMBLY:

To reassemble, reverse the disassembly processes. Be sure to tighten the chuck knob collet firmly so it will grip the sleeve securely. Press compression springs into cam evenly.

Note: Make sure the thrust washer is in place between the chuck body and knob. If chuck knob is too close to the body, the lack of distance between the two may cause the chuck knob to lock up.

(For referencing parts see diagram on page 15)

Problem: Chuck open and closes with difficulty!

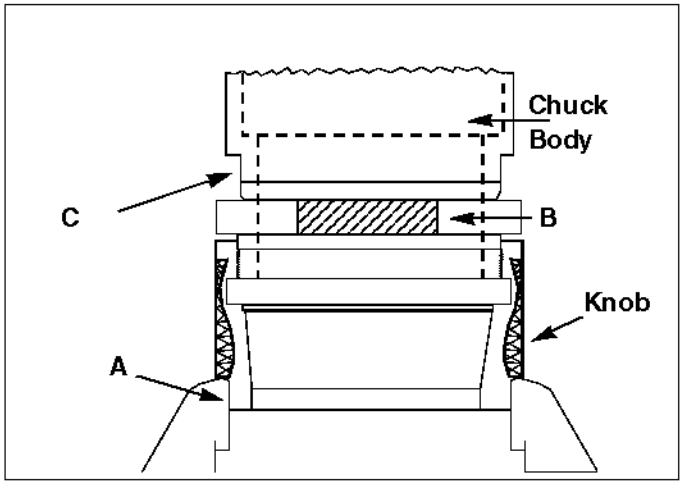
A. Make sure threads are free of grinding particles, and not damaged.
B. Check the jaw springs, make sure they are pushed all the way into the holes of the closing screw.

Problem: Knob turns and chuck won't tighten on the drill!

A. Upon turning the chuck knob, if the sleeve inside the knob slips, then the collet is not tight enough. A correction may be made by tightening the collet further into the knob.
B. Jaws turn with the knob: The key inside the chuck body has broken loose. Replace the chuck body.

Problem: Chuck won't grip drills tightly enough!

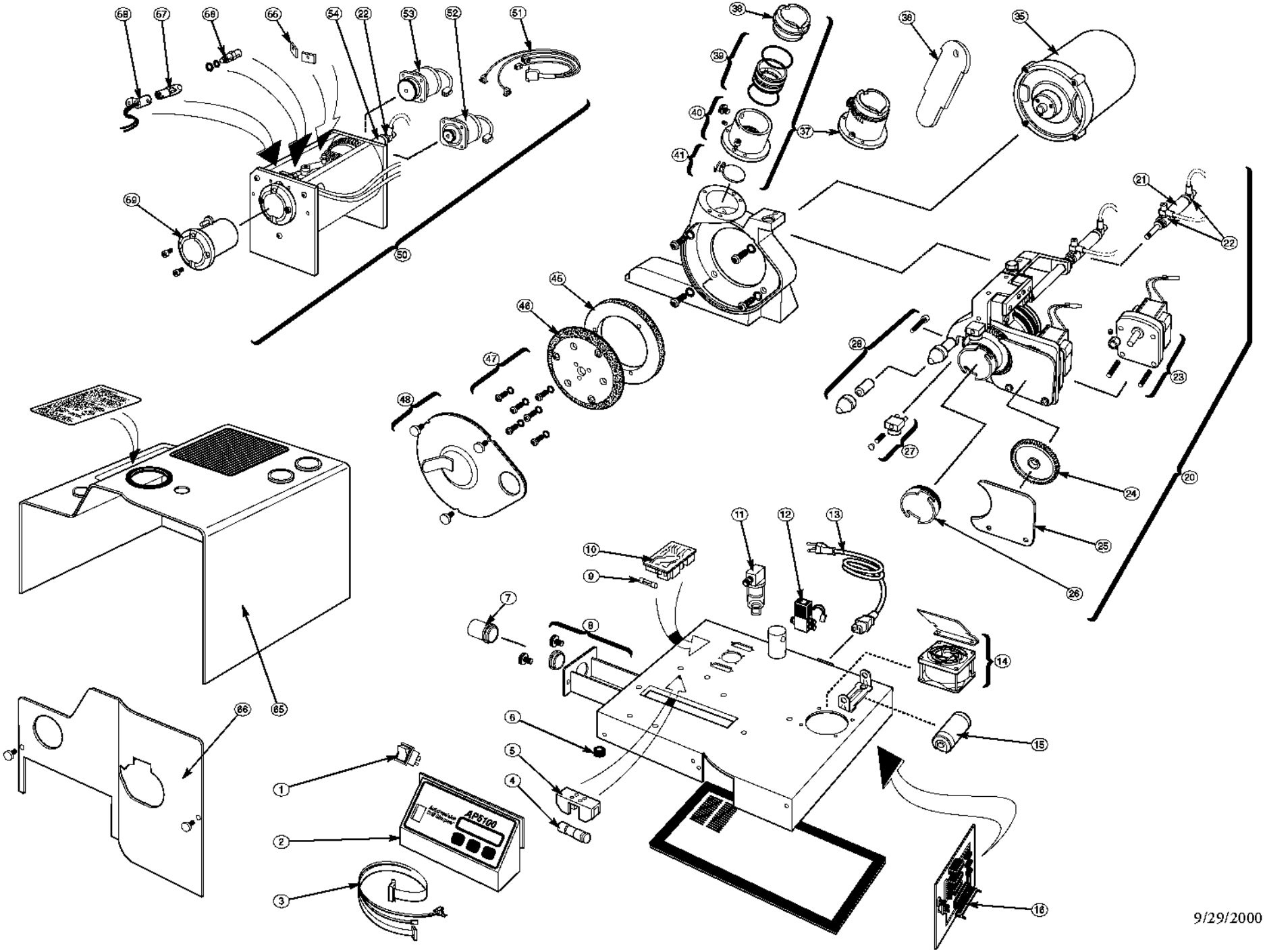
A. The jaws may be bent. Close the chuck all the way and make sure the jaws line up with each other and appear straight. (Replace if necessary)
B. Check the jaw springs and make sure they are pushed into the mounting holes located in the closing screw.
C. The chuck knob on the collet (B in drawing below), may not be tight enough, thereby causing the chuck knob to rotate on the sleeve.
D. The closing screw and sleeve threads may be dirty with grinding dust. Disassemble chuck and clean the parts as previously mentioned.

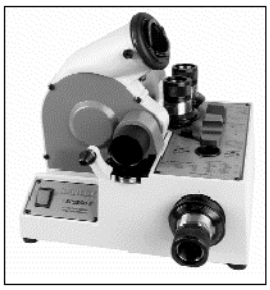


NOTES

DAREX AP5100 MACHINE PARTS LIST

# ON DWG	PART #	DESCRIPTION	# ON DWG	PART #	DESCRIPTION
1	PP02165EF	115/220 Volt On/Off Switch	26	PP10453TF	Sharpening Tube Insert
2	SA10054EF	LCD Control Panel Assembly	27	SA10540BA	Infeed Brg./Blk./ Screw Assembly
3	PP10066EF	Display Cable (1 Sensor)	28	SA10520TA	Swg Cam Foll Cn / Br Assm. Complete
4	PP10016EF	Fuse, Bussman FRN-R, 6 -1/4 Amp (1)	35	SA10350MA	115 Volt Motor / Hub Assembly
5	PP10018EF	Fuse holder	35	SA10353MA	230 Volt Motor / Hub Assembly
6	SA08664PA	Rubber Feet / Screws Assembly (4 Each)	36	PP10109SF	Point Split Adjustment Tool
7	PP02175TF	Grit Tray Vacuum Tube	37	SA10316TA	Point Split Tube Assembly Complete
8	SA10115SA	Grit Tray Assembly Complete	38	PP10316TF	Splitter Stop Tube
9	SPECIAL	Fuse 2 Amp 250V GMA (Pwr.Sply.) (1)	39	SA10313TA	Splitter Adjustment Nut / O Rings
10	PP10006EF	Power Supply	40	SA10318TA	Point Split Adjustment Tube Assembly
11	SA09028NA	Air Filter / Water Trap Assembly	41	SA10518SA	Point Split Grit Flap Assembly
12	SA10085EA	115 Volt Elec. Air Solenoid Assembly	45	PP02120GF	Point Split CBN Wheel
12	SA10088EA	220 Volt Elec. Air Solenoid Assembly	46	PP02110GF	118 Degree CBN Grinding Wheel
13	PP10144EF	115 Volt Cord Set	46	PP02115GF	135 Degree CBN Grinding Wheel
13	PP10148EF	230 Volt Cord Set	47	SA10370FA	Whl. Screws/ Wshrs. (6 Each)
14	SA10034EA	115 Volt Cooling Fan Assembly	48	SA10302SA	Whl. Grd. Cover Assembly Complete
14	SA10032EA	230 Volt Cooling Fan Assembly	50	SA10210BA	Alignment Assembly Complete
15	PP10024EF	115 Volt Capacitor	51	PP10014EF	Stepper Cable (2 Sensors)
15	PP10028EF	230 Volt Capacitor	52	SA10276EA	Stepper Motor Assembly (Align)
16	PP10004EF	Logic Board	53	SA10280EA	Stepper Motor Assembly (MTO)
20	SA10404CA	115 Volt Sharp Arm Assembly Complete	54	PP10264NF	Alignment Air Cylinder
20	SA10406CA	230 Volt Sharp Arm Assembly Complete	55	SA0278NA	Carbide Alignment Pawls (2)
21	PP10514NF	Sharpening Fixture Air Cylinder	56	PP10212NF	Chuck Timing Tube Air Valve
22	PP10266NF	Cylinder Speed Control Valve (1)	57	PP10294EF	13 Volt 3.8 Watt Alignment Lamp (1)
23	SA10460TA	115 Volt Chuck Tube Gear Mtr Assembly	58	PP10292EF	Lamp Socket
23	SA10465TA	230 Volt Chuck Tube Gear Mtr Assembly	59	SA10208TA	Chuck Timing Tube Assembly
24	PP10472LF	Gear Motor Gear	65	SA10120SA	Top Cover Assembly
25	PP10478SF	Gear Motor Guard	66	SA10135SA	Front Cover Assembly
			Not Shwn	PP10591KF	AP-5100 Operators Manual


APS100

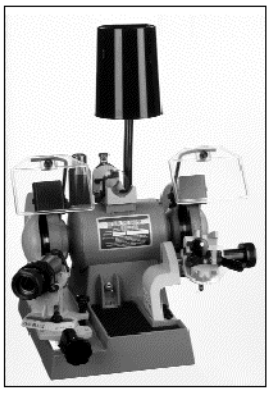


SP 2500 Precision Drill Bit Sharpener

- Sharpens & splits drills in 30 seconds
- Sharpens drills 1/16" to 1" (1.5mm to 26mm)
- 118° or 135° point angles
- Sharpens HSS, carbide, coated drills
- Simple-to-use

V290 Drill Bit Sharpener

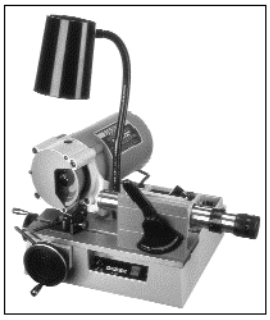
- Sharpens & splits drills in 1 minute
- Sharpens drills 1/8" to 3/4" (3mm to 19mm)
- 118° to 140° point angles
- Sharpens HSS or carbide
- Easy-to-use



M5 Drill Bit Sharpener

- Versatility is the Key!
- Sharpens drills #70 to 1-1/8" (.75mm to 28mm)*
- Sharpens left handed, brad point and step drills*
- Splits & web thins drills

*Optional attachments sold separately



E90 Precision End Mill Sharpener

- Sharpens ends and flutes
- Sharpens both primary and secondary angles in one easy set up
- Sharpens 2, 3, 4 & 6 flute end mills
- Smooth & balanced grinding
- Sharpens HSS and carbide

Darex Corporation was founded in 1973 and is located in Ashland Oregon. All facets of product design, development, manufacturing, sales and administration take place in our facility.

We offer quality cutting tool sharpeners at a reasonable price for various industrial customers including machine/job shops and manufacturers.

All Darex products are built and tested in our shop. We pride ourselves on quality products with a manufacturers warranty to back them up.

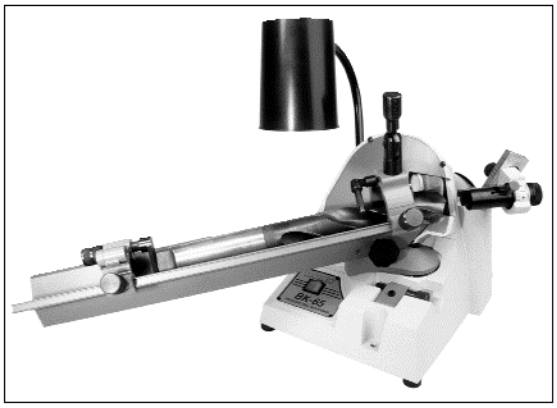
Darex strives to meet our customer needs, today and in the future. If you have questions about our current product line, or suggestions for future developments, please feel free to contact us.

DAREX

DAREX CORPORATION
PO Box 277 • 220 East Hersey
Ashland, OR 97520

Phone (541)488-2224
(800)547-0222
Fax (541) 488-2229

See us at our internet site
www.darex.com



BK65 Large Drill Bit Sharpener

- Sharpens 3/4" to 2-1/2" drills (19mm to 65mm)
- Controllable web thinning
- 118° and 135° angles
- Powerful 1 horsepower motor
- Easy-to-operate

AP5100 AutoPrecision Drill Bit Sharpener

- Sharpens and splits up to 500 drills in one shift
- Semi-automatic sharpening
- Sharpens drills 1/16" to 1" (1.5mm to 26mm)
- 118° or 135° angles
- Sharpens HSS, carbide, coated drills