Safety Instructions

WARNING:

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 TOOLS WITH CARE. Keep tools sharp and clean for best and safest performance.
10. DISCONNECT TOOLS from the power source before service.

Avoid accidental starting. Make sure switch is in the “OFF” position before plugging it in.

11. USE RECOMMENDED ACCESSORIES. Consult the owner’s manual for recommended accessories. The use of improper accessories may cause hazards.
12. 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 parts that is damaged should be properly repaired or replaced.
13. DO NOT USE DAMAGED OR UNSHAFTED WHEELS. Use grinding wheels suitable for speed of grinder.
14. NEVER LEAVE TOOL RUNNING UNATTENDED. Turn power off.
15. 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 will draw. An undersized cord will cause a drop in line voltage, resulting in a loss of power and overheating.
16. The continuous A-weighted sound pressure level at the operator’s ear is not over 60 dB (A).
17. Risk of injury due to accidental starting. Do not use in an area where children may be present.
18. The weighted root mean square acceleration value to which the arms are subjected 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 the 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.
   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 of 150-250 volts nominal rating of 150-250 volts.

Table 1. Minimum Gauge Cords

<table>
<thead>
<tr>
<th>Jacketed Wire</th>
<th>10 ft</th>
<th>15 ft</th>
<th>25 ft</th>
<th>30 ft</th>
<th>50 ft</th>
<th>100 ft</th>
<th>150 ft</th>
<th>200 ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 Gauge (No. 6)</td>
<td>10 ft</td>
<td>15 ft</td>
<td>25 ft</td>
<td>30 ft</td>
<td>50 ft</td>
<td>100 ft</td>
<td>150 ft</td>
<td>200 ft</td>
</tr>
<tr>
<td>12 Gauge (No. 12)</td>
<td>10 ft</td>
<td>15 ft</td>
<td>25 ft</td>
<td>30 ft</td>
<td>50 ft</td>
<td>100 ft</td>
<td>150 ft</td>
<td>200 ft</td>
</tr>
</tbody>
</table>

Fig 1. Grounding Methods

A. Grounding Pin
B. Metal Stud
C. Grounding Means
D. Grounding Pin

* Only the applicable parts of the Table need to be included. For instance, a 120-volt product need not include the 240-volt listing.
Material Safety Data Sheet

US DEPARTMENT OF LABOR  Form Approved  Occupational Safety and Health Administration
OSHA No. 44-R1-967

MATERIAL SAFETY DATA SHEET

SECTION I
MANUFACTURER’S NAME: Danex Industrial Corporation
EMERGENCY PHONE NO.: 419-469-9994
ADDRESS: 250 Harvey Road, Ashland, Oregon 97526
CHEMICAL NAME & SYNONYMS: Danex-Diamond/DBM Product Families, Standard Series and 300 Series Diamond MicroPowder
TRADE NAME & SYNONYM: Danex-Diamond/DBM Product Families, Standard Series and 300 Series Diamond MicroPowder

SECTION II COMPOSITION
CHEMICAL NAME: Nickel/Industrial Diamond
REGULATED: Yes/No
CAS #: 7440-02-0 (Nickel) 7802-40-3 (Diamond)
ASH TEST: 1.0 mg/m³ 160 mg/m³ (Ninco)
CHRONIC: Yes/No


SECTION III - PHYSICAL AND CHEMICAL DATA
BOILING POINT (°C): n/a
MELTING POINT (°C): 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 SOLVENTS: n/a
PERCENT VOLATILE BY VOLUME (%): n/a

SECTION IV - FIRE AND EXPLOSION HAZARD DATA
FLASH POINT: n/a
FLAMMABLE LIMITS: n/a
FLAMMABLE LOWER EXPLOSION LIMIT (UEL): n/a
FLAMMABLE UPPER EXPLOSION LIMIT (UEL): n/a
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: Toxicity in breathing (Dust from wheel use).
INGESTION: If a dust, symptoms are variable.
SKIN: Irritation (especially if sensitive to Ni).
EYES: Irritation (from Ni on discarded particles).

FIRST AID AND MEDICAL INFORMATION:
INHALATION: Move to fresh air. Provide oxygen if necessary.
INGESTION: Obtain medical attention.
SKIN: Wash thoroughly with water. Obtain medical attention.
EYES: Rinse thoroughly with water. Obtain medical attention.

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 - CORROSION AND REACTIVITY DATA
STABILITY: Stable
POLARIZATION: May occur
INCOMPATIBILITY: (Materials to avoid) n/a
HAZARDOUS COMPOSITION PRODUCTS: n/a

CONDITIONS TO BE AVOIDED: Contact with strong acid/alkalis, electrolyzed 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:
Inhalation protection as needed as per OSHA 29 CFR 1910.124
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 use OSHA 29 CFR 1910.138
OTHER PROTECTIVE EQUIPMENT: Use standard procedures for grinding operations.

SECTION IX - STORAGE AND HANDLING PROCEDURES
NORMAL STORAGE AND HANDLING:
Store in cool, dry area, away from chemicals.
NORMAL USE: Use adequate ventilation (See Section VIII)

Form OSHA 26
THE DAREX STORY


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" (1.3mm 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.

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*For Technical Service visit our web site at www.darex.com/technicalservice Or call Darex Corporation 800-547-0222
**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 electroplated, which do not require truing or dressing.

**Cycle time:** Typically 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:** 40-95°F (4-35°C)

**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:

1. **ALIGNING THE DRILL**
2. **SHARPENING THE DRILL**
3. **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 maintain 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 orientes 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 about .1/8" 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) Cam: Threaded onto the chuck, the cam produce the proper drill radius grind needed to drill a correct hole. Also, retaining springs are mounted on thecams to allow the cam to properly lock and hold in the sharpening port.
(3) Cam doges: These tabs on the front of the cam 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 pawl 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 the chuck in the port and realign as stated above. When the drill is 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 slot 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 slot. 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 its 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 approximately 1/2” 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 COUNTERCLOCKWISE if the drill is SPLIT TOO LITTLE. Rotate the wrench CLOCKWISE 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.

SETTING THE ADJUSTABLE POINT SPIDER:
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 spider 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 effect 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 splitters. 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.

![Chisel Angle](image)

To adjust the point splitter, note the knurled knob at the side of the splitters. 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)

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 oversized, 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 file 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 expect 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 # FP02110GF OR
(135° CBN) Part # FP02115GF
Standard Point Split Wheel:
(CBN) Part # FP02120GF
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 appear 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 thumb screws 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)

Under split  Correct  Over split

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 splitters, 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 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 3/8", 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 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 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 15 volt - 3.8 watt (Part # TP10294EF).

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 are 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:

<table>
<thead>
<tr>
<th>Button</th>
<th>Language</th>
<th>Metric</th>
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<tr>
<td></td>
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<tr>
<td></td>
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<td>French</td>
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<tr>
<td></td>
<td>(open)</td>
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</table>

MACHINE SHUTS DOWN ALL ELECTRICAL ITEMS:
Machine motors quit, LCD black 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 # PP1006EF)

   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 Dares 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 VACU-
UM SYSTEM BE CONNECTED TO THIS UNIT
WHEN IN USE! DUE TO THE GRINDING VOLUME
THIS UNIT IS CAPABLE OF PRODUCING A VACU-
UM 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 "Changing 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 NOTES: (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 vacuum 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 bellows 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
<table>
<thead>
<tr>
<th>ON DWC</th>
<th>PART #</th>
<th>DESCRIPTION</th>
<th>ON DWC</th>
<th>PART #</th>
<th>DESCRIPTION</th>
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<td>1</td>
<td>PP0042TF</td>
<td>14&quot; 58&quot;, L' THREAT WASHER (ALL CHUCKS)</td>
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<td>14F CHUCK NOSE</td>
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<td>CHUCK FET SEAL (ALL CHUCKS)</td>
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![Diagram of DAREX AP5100 CHUCK PARTS](image-url)
AP5100 CHUCK MAINTENANCE & GUIDE

A routine cleaning and maintenance program for the chuck is recommended. This will help provide a normal life cycle for the chuck 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 3/4 to 1/2 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 #03005 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 cam. 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 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

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 knobs, 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.
### DAREX AP5100 MACHINE PARTS LIST

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<th># ON DWG</th>
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<td>PP10453TF</td>
<td>Sharpening Tube Insert</td>
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<td>LCD Control Panel Assembly</td>
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<td>SA10640BA</td>
<td>Infeed Brg/Blk / Screw Assembly</td>
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<td>Swg Cam Foll On / Br Assm. Complete</td>
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<td>SA10350MA</td>
<td>115 Volt Motor / Hub Assembly</td>
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<td>9</td>
<td>SPECIAL</td>
<td>Fuse 2 Amp 250V GMA (Part Safe) (1)</td>
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<td>Splitter Adjustment Nut / O Rings</td>
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<td>11</td>
<td>SA09028NA</td>
<td>Air Filter / Water Trap Assembly</td>
<td>41</td>
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<td>Point Split Grt Flap Assembly</td>
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<td>SA10065EA</td>
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<td>118 Degree CBN Grinding Wheel</td>
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<td>PP10144EF</td>
<td>115 Volt Cord Set</td>
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<td>PP02115GF</td>
<td>135 Degree CBN Grinding Wheel</td>
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<td>PP10148EF</td>
<td>230 Volt Cord Set</td>
<td>47</td>
<td>SA10370FA</td>
<td>Whl Screws / Washers (6 Each)</td>
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<td>14</td>
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<td>Whl. Grd. Cover Assembly Complete</td>
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<td>15</td>
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<td>51</td>
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<td>Stepper Cable (2 Sensors)</td>
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<td>20</td>
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<td>Chuck Timing Tube Air Valve</td>
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<td>22</td>
<td>PP10266NF</td>
<td>Cylinder Speed Control Valve (1)</td>
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<td>PP10284EF</td>
<td>13 Volt 3.8 Watt Alignment Lamp (1)</td>
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<td>PP10478SF</td>
<td>Gear Motor Guard</td>
<td>66</td>
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<td>Front Cover Assembly</td>
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Not Shown: PP10591KF AP-5100 Operators Manual

9/29/2000
**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 angle
- 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 angle
- Sharpens HSS or carbide
- Easy-to-use

**M5 Drill Bit Sharpener**
- Versatility is the Key!
- Sharpens drills #70 to 1-1/8" (1.75mm to 28mm)*
- Sharpens left handed, bent point and step drills*
- Splits & web shank 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

**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

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.

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