

# DAREX AP5000

## Auto Precision Drill Bit Sharpener

*See other  
sharpeners  
on back!*



# OPERATING INSTRUCTIONS

# AP-5000 Safety Instructions

## Darex Operator Information

Please read your instruction manual before operating the AP-5000 sharpener. While the machine is designed to be "User Friendly" and every possible safety measure has been built in, we strongly advise you to familiarize yourself with this instruction manual before operating the unit.

## Important Warning

Severe damage to the grinding wheel will result if you attempt to sharpen a carbide drill on a borazon (CBN) grinding wheel. The borazon grinding wheel is for HSS (High speed steel) or cobalt drills. For carbide drills use a Darex diamond wheel.

## Caution

For your own safety, please read instruction manual before operating sharpener. Always disconnect sharpener from the power supply when replacing parts or repairing interior parts.

## Installation

Check sharpener nameplate to make certain the rating is correct for the power supply, voltage and frequency. Place sharpener on a solid bench. If your AP is mounted on a stand make sure machine is securely fastened to the stand and stand is bolted to the floor.

## Operation

Insert plug into receptacle and turn on switch. Sharpener LCD will light up and show "Calibrating" on the screen.

## Maintenance

Little maintenance other than emptying grit box, replacement of light bulb and eventually the replacement of the grinding wheel is needed. ( See routine maintenance on page 14.)

**A. Grounding instructions** - All grounded cord connected tools. In the event of a malfunction or breakdown, grounding provides the 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 plug provided; if it will not fit the outlet, have the proper outlet installed by a qualified electrician. Improper connection of the equipment-grounded conductor can result in a risk of electrical shock.

The conductor with insulation, having the outer surface that is green, with or without yellow stripes, is the equipment grounding conductor. If repair of the electric cord is necessary, do not connect the equipment-grounding conductor to a live terminal. Check with a qualified electrician 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.

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

Grounded, cord connected tools intended for use on a supply circuit having a nominal rating between 150-250 volts, inclusive.

## B. Safety Tips for all tools

Keep work area clean. Cluttered areas and benches invite accidents.

Don't use in a dangerous environment. Don't use power tools in damp locations, or expose them to rain. Keep work area well lit.

Don't force tool. It will do the job better and safer at the rate for which it was designed.

Use the right tool. Don't force tool or attachment to do a job it was not designed for.

Keep children away from all power tools.

Wear proper apparel. No loose clothing, neckties, rings, bracelets, or other jewelry to get caught in moving parts. Non-slip footwear is recommended. Wear protective hair covering to contain long hair. Safety glasses are recommended.

Don't overreach. Keep proper footing and balance at all times.

Maintain tools. Keep tools sharp and clean for best and safest performance. Follow instruction for lubrication and changing accessories.

Disconnect tools before servicing; when changing accessories.

Use the recommended accessories. Consult the owners manual for recommended accessories.

Never stand on tool. Serious injury could occur. Check damaged parts. before further use of the tool, check part that is damaged for proper operation, alignment and performance.

Never leave tool unattended. Turn power off.

# US DEPARTMENT OF LABOR

Form Approved OMB No. 44-R1367

## Occupational Safety and Health Administration

### MATERIAL SAFETY DATA SHEET

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

#### SECTION I

MANUFACTURE'S NAME: Darex Corporation  
EMERGENCY PHONE NO: (541) 488-2224  
ADDRESS: 220 East Hersey Street, Ashland, Oregon 97520  
CHEMICAL NAME & SYNONYMS: Diazon-Electroplated Diamond/CBN Products, Diamond  
(uncoated), man-made  
Diamond, 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 - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, (UNITS)	TLV (UNITS)	TLV & SOLVENTS %
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Pigments	_____	Base Metals	_____
Catalyst	_____	Alloys	_____
Vehicle	_____	Metallic Coatings	_____
Solvents	_____	Filler Metal	_____
Additives	_____	Plus Coating/Core Flux	_____
Others	_____	Others	_____

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS OR GASES	TLV (UNITS)
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NAIF

#### SECTION III - PHYSICAL DATA

BOILING POINT (F) NAIF SPECIFIC GRAVITY (H<sub>2</sub>O = 1) NAIF  
VAPOR PRESSURE  
VAPOR DENSITY (AIR = 1): NAIF PERCENT VOLATILE: NAIF  
BY VOLUME (%): NAIF  
SOLUBILITY IN WATER: NAIF EVAPORAT'N RATE =1 NAIF  
APPEARANCE AND ODOR: Clear, White To Yellow To Dark Crystals Silver Color

#### SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED) FLAMMABLE LIMITS LEL UEL

NAIF \_\_\_\_\_

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

#### SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE EFFECTS OF OVEREXPOSURE  
INHALATION: If dust generated, it could contain nickel, inhaling can cause respiratory disease.  
Dust can result from grinding ingestion. NAIF  
SKIN: Prolonged contact with nickel may cause dermatitis, more frequently at high temperature  
& humidity.  
Wash skin with water, seek medical attention if needed.

EYES	DUST MAY IRRITATE EYES WASH WITH LARGE AMOUNTS OF WATER SEEK MEDICAL ATTENTION IF NEEDED
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OTHERS	GRINDING MAY CREATE ELEVATED NOISE LEVELS WHICH MAY EFFECT HEARING
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EMERGENCY AND FIRST AID PROCEDURES  
OBTAIN MEDICAL ASSISTANCE

#### SECTION VI - REACTIVITY DATA

STABILITY UNSTABLE CONDITIONS TO AVOID

STABLE X  
INCOMPATIBILITY (Materials to avoid)

HAZARDOUS COMPOSITIONS PRODUCTS  
NAIF

HAZARDOUS POLYMERIZATION  
WILL NOT OCCUR

CONDITIONS TO BE AVOIDED  
CONTACT WITH STRONG ACIDS/CAUSTICS  
SECTION VII - SPILL OR LEAK PROCEDURES

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

WASTE DISPOSAL METHOD  
Standard landfill methods

#### SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

Respiratory protection as needed see OSHA 29 CFR 1910.134

VENTILATION	LOCAL EXHAUST	SPECIAL
Recommended see OSHA 29 CFR 1910.94		

PROTECTIVE GLOVES	EYE PROTECTION
As desired by user	Recommended see OSHA 29 CFR 11910.21

OTHER PROTECTIVE EQUIPMENT

NAIF

#### SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

NAIF

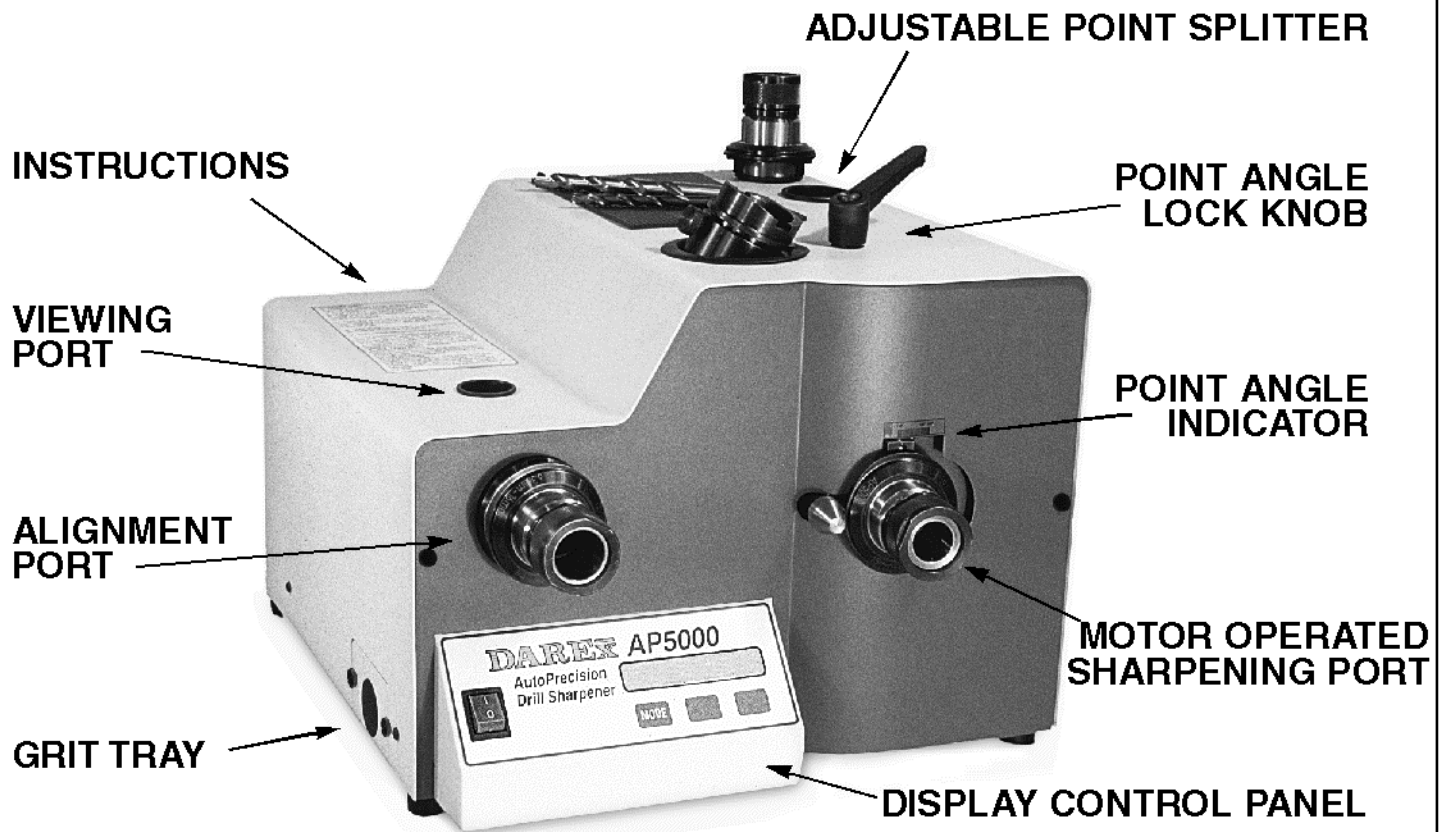
OTHER PRECAUTIONS

NONE

PAGE (1)

FORM OSHA-20

# AP-5000 AUTO PRECISION DRILL SHARPENER



## THE BASIC CONCEPT OF YOUR DAREX AUTO PRECISION DRILL SHARPENER

Your AP-5000 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-5000:

### 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.

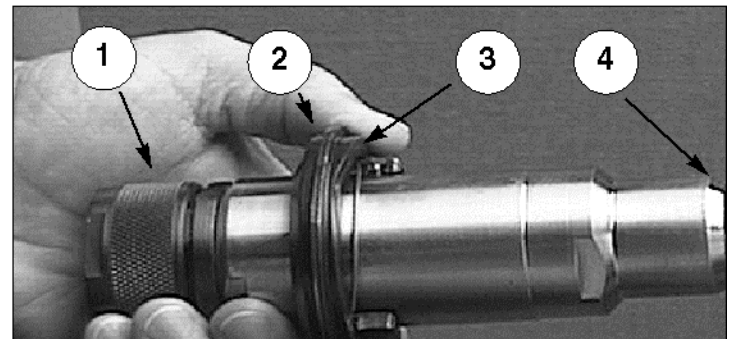
### 2. SHARPENING PORT - MOTOR OPERATED:

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 very much 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. Chuck Knob: By rotating the chuck knob, the jaws are opened and closed to accommodate drill size variation.
- ②. Cams: Threaded on to 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: Hold the drill in place inside of the chuck.

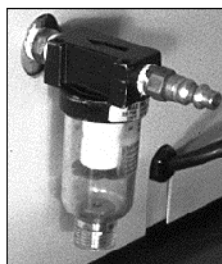


# INSTRUCTIONS FOR SHARPENING DRILLS WITH YOUR NEW DAREX AUTO PRECISION DRILL SHARPENER

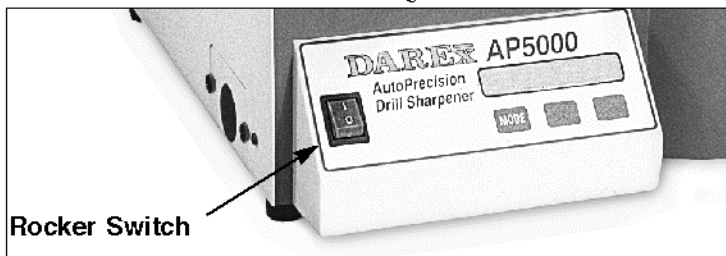
*You will notice that the basic instructions are printed on the top of the machine. These more detailed instructions will better help to familiarize you with your auto precision drill sharpener.*

## 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.

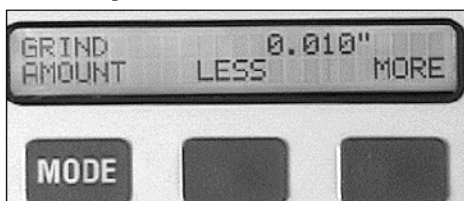


1. Turn the rocker switch on. A light in the switch will come



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 (9) 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 this calibrating finalization, 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 6 degrees relief depending on the drill 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-(6)
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 how much material that needs to be

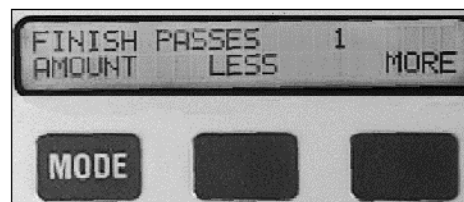


removed from the tip of the drill bit. The .010" is standard and .019" is the maximum.

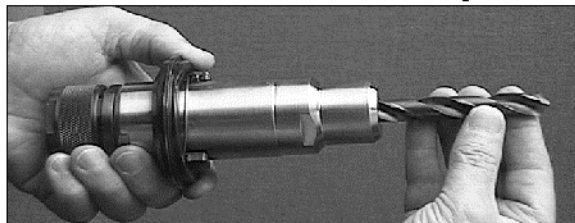
Push the "MORE" button to increase material removal or the "LESS" button to lessen or decrease the amount of material removal. Very small drills about 1/16" to 1/4" will only require about .005" material removal.

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.

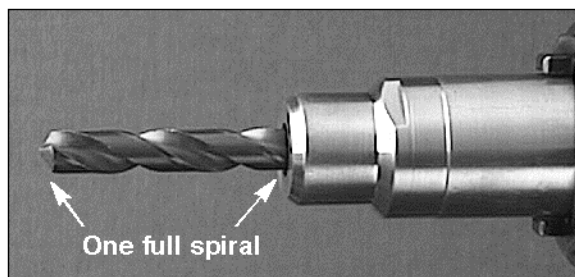
NOTE: Once machine is turned off and then back on again the last settings that were made will appear on the LCD. If you wish to cancel them, you will see the word "RESET" on the right of the screen. Push the button below that and all of the numbers will go back to the standard settings.

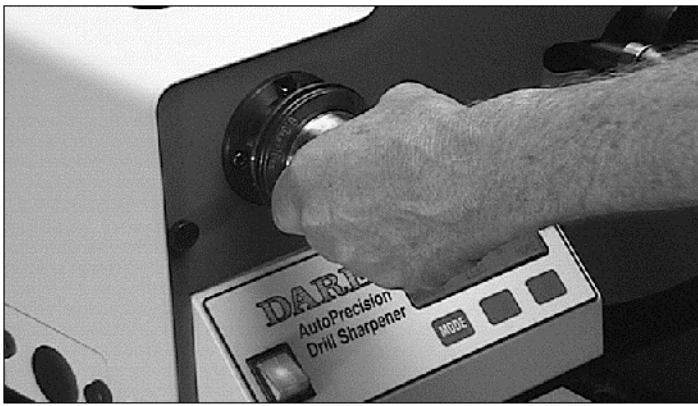


5. Insert the drill into the appropriate sized chuck, (sizes are marked on the cam.) Rotate the chuck knob which opens and closes the chuck jaws onto the drill. Then slightly loosen the chuck jaws. To determine how tightly the drill should be held, the drill should be able to slide out when the chuck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

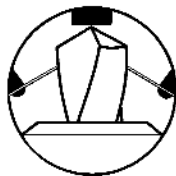




7. Insert the chuck with the drill into the alignment tube. The cam dogs should bottom out against the alignment slots. Push the chuck in firmly enough for the cam to depress the small button located in the top alignment cam dog slot. This button activates the alignment pawls in the mechanism. Look through 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 Para.(6), page (2). Reinsert chuck in the port and realign as stated above.



**Right**



**Wrong**

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 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.

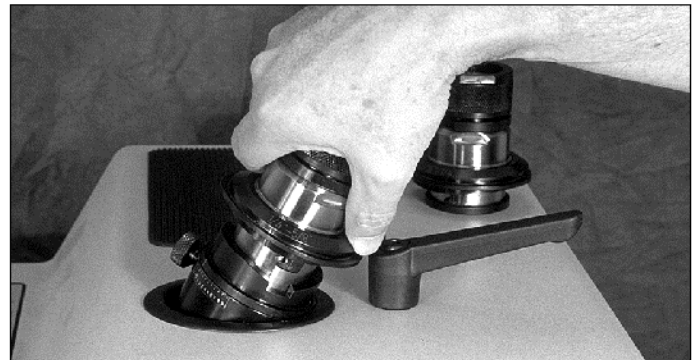
10. Once the machine stops rotating the drill, the sharpening port will disengage and move away from the wheel. Grasp the chuck and rotate it counterclockwise to unlock it from the sharpening port slots and pull the chuck toward you to remove it from the machine. The drill point has now been sharpened.

**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 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.

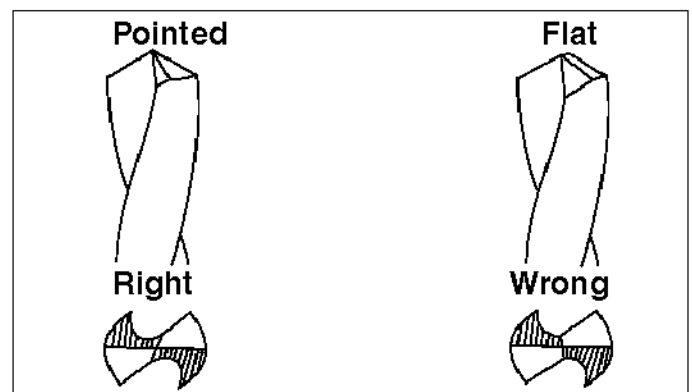
**NOTE:** Do not push or force the chuck into the splitting port or wheel damage will occur.



## SETTING THE POINT SPLITTER:

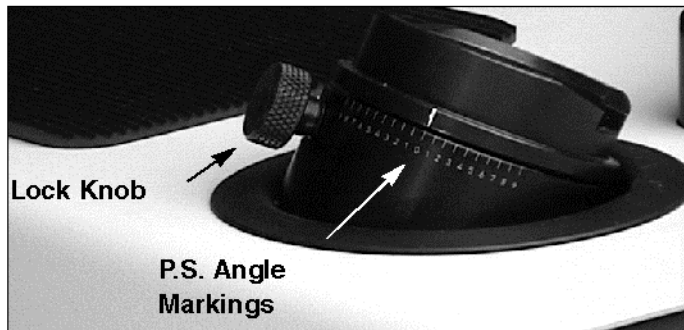
Depending on the Type of drill, Size of drill or Point angle of the drill being sharpened and split, rotational split angle may be required. The point splitter has the capability of being changed so the split angle is in relation to the chisel angle, (The line across the center of the drill web). A proper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



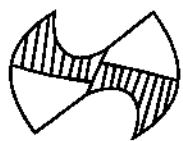


To adjust the point splitter, note the knurled knob at the side of the splitter. Loosen this lock knob and rotate the upper portion of the splitter clockwise. The amount of rotation will depend upon the chisel angle of the drill point - the split should be at least 5 degrees further clockwise than the 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)

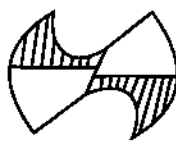


## POINT SPLITTER DEPTH ADJUSTMENT:

If the drill is being split too much or split too little, the following adjustment is to be made: Located below the splitter rotational marking is a small hex head set screw. It is about the same level as the sheet metal top cover. Insert a hex wrench in the set screw and loosen it. This will free the point splitter adjustment tube. Loosen the knurled 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/brush. 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" Once the splitter is readjusted tighten and remove the hex wrench. Locate the split angle to the desired setting and tighten the lock knob.

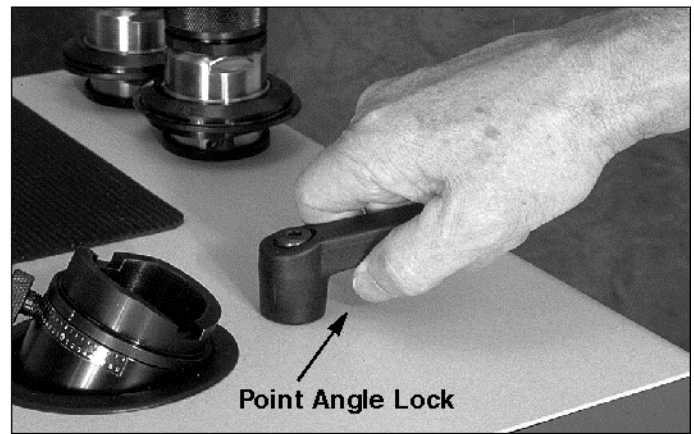


split too much

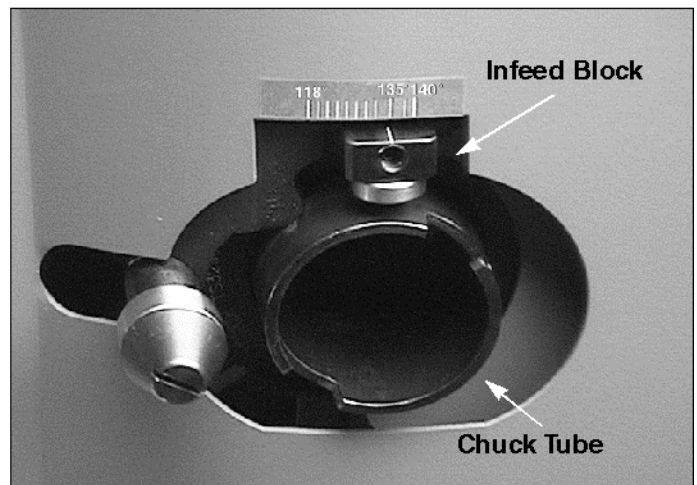


split too little

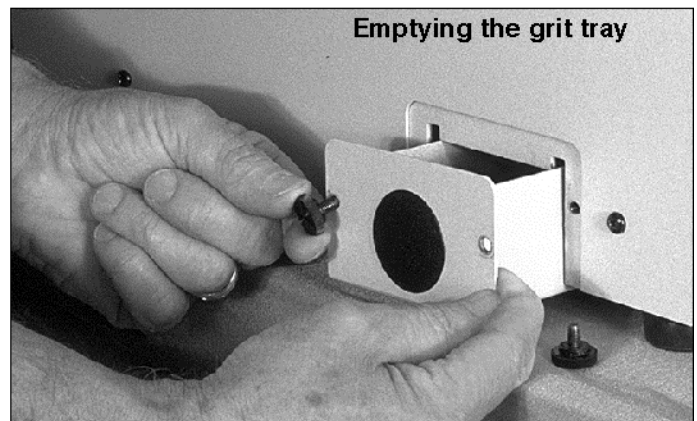
## SETTING THE DRILL POINT ANGLE:



While holding the front lip of the sharpening tube, grasp the point angle lock handle, located to the right of the point splitter and loosen by turning it counterclockwise. The infeed bearing and block located directly above the sharpening port has a line marked on the block. Move the block to the desired point angle by aligning the mark on the block with the point angle indicator marks. Turn the point angle lock handle clockwise to retighten the point angle mechanism.

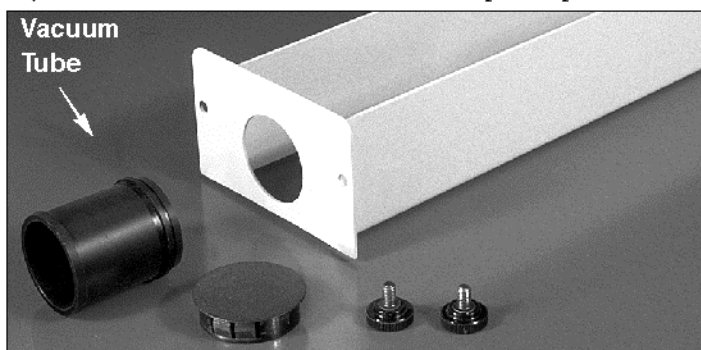


**GRIT TRAY:** As you use your sharpener, grinding particles will accumulate inside the grit tray. Do not let these



particles become more than 30 to 40% full. 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.

**GRIT TRAY VACUUM TUBE:** An important recommendation is to **INSTALL A VACUUM SYSTEM** to this unit. 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.



## CHANGING THE WHEELS:

Pull the electrical power plug! Loosen the point angle lock knob and set the point angle at the 140 degree setting and retighten the knob. This procedure will move the swing cam bearing aside so as to clear the front cover plate. Remove the two thumb screws from the front cover plate. Pull the plate forward to remove and expose the inside wheel cover plate.

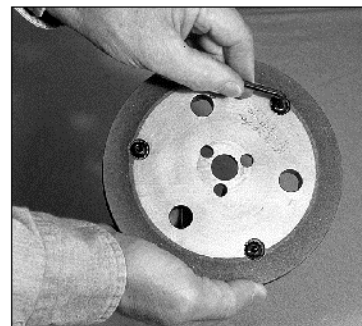


Loosen and remove the three thumb screws that hold the wheel cover plate on to the wheel housing. Grasp the handle in the middle of the cover plate with the left hand and with the right index finger pull the bellows seal away from the plate. Pull the cover to the left and away from the machine to expose the grinding wheels. Using a hex wrench remove the three center screws from the front grinding wheel.



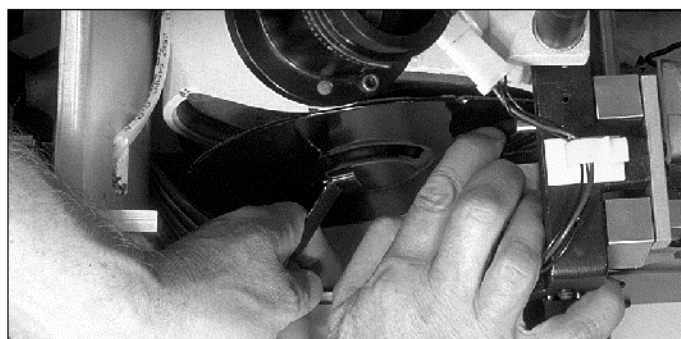
Inspect the wheels for abrasive remaining. Worn wheels will appear smooth at the outer edge. Remove the sharpening wheel from the point split wheel by removing three screws. The split point wheel life may be doubled by simply reversing it. If necessary, replace the worn wheel(s). New wheels will produce 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, 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.



**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. Reset the point angle location to the angle your drill points are being sharpened.



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

Main Grinding Wheel (135 degree-CBN-	part # PP02115GF
Point Split Wheel .....	part # PP02120GF
Optional: 118 degree -CBN .....	part # PP02110GF

**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.



# ALIGNMENT INSTRUCTIONS

Your AP-5000 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 acquire 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:

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 acquire approximately 6 to 7 degrees relief depending on the drill style, size and 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 4 to 5 degrees. This will result in less than standard factory relief and produce closer hole tolerances.

## POINT ANGLE Vs RELIEF:

The sharper point angle of the drill to be sharpened (118 degree), the machine will require that more relief setting be added. You may notice the point angle changes a small amount as the relief is changed, which is a common result of a cam generated drill grinder.



High Helix

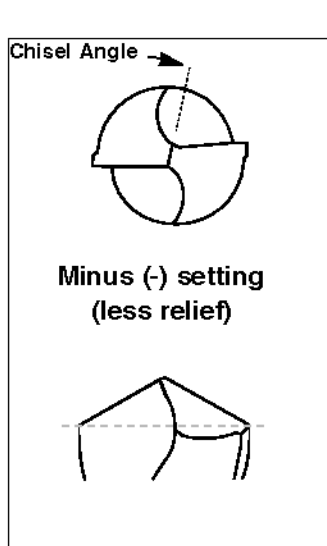


Low Helix

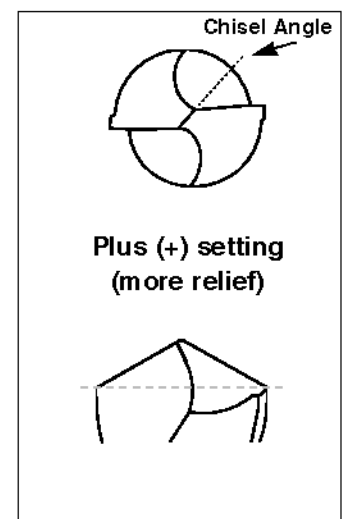
## HELIX Vs RELIEF:

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. 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". Several experimental grinds may be needed to achieve the correct relief for these types of drill bits. 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 also.

Small drill: Small drills of about 1/8" size may have too much relief, thus 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 lessor relief setting on the minus side. Burning or chattering: Small drills do not dissipate the heat well so set the material removal to the least amount needed to sharpen the drill. Chattering can also be the result of too much material removal.



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.



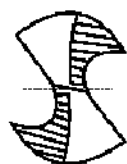
# MACHINE ADJUSTMENTS (Mechanical)

## POINT SPLITTER

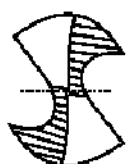
**CENTERING THE POINT SPLITTER:** If the split of the drill is not quite into the chisel line, (The line across the center of the drill), then the point splitter tube will need to be adjusted. The top cover is to be removed prior to adjustment.

**Removing the top cover:** Unplug the machine! Set the point angle to the 140 Degree position. Using a hex wrench loosen the point angle lock knob screw and remove the lock knob. 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. 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)



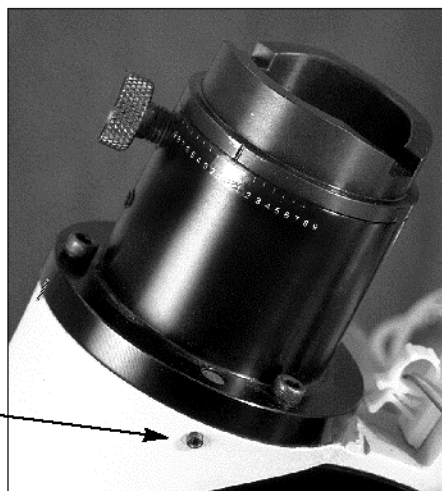
Under split



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 left drill point 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 and 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 the reverse of how it was removed.

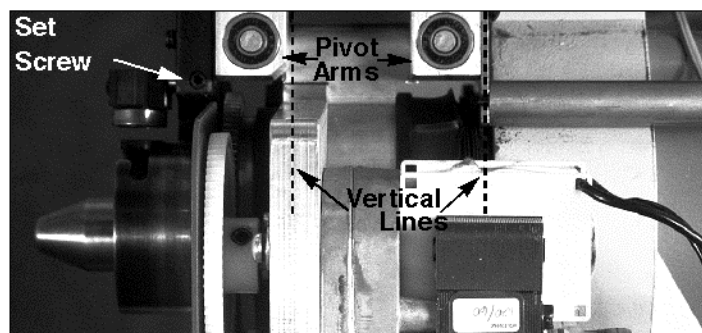


Slide movement  
adjustment screw

## SHARPENING FIXTURE:

### MATERIAL REMOVAL ADJUSTMENT- INFEED BLOCK:

If the infeed bearing and block become out of adjustment in relation to the factory setting, the result 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. Set the pivot arms to vertical, ( See photo below.) then 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 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.

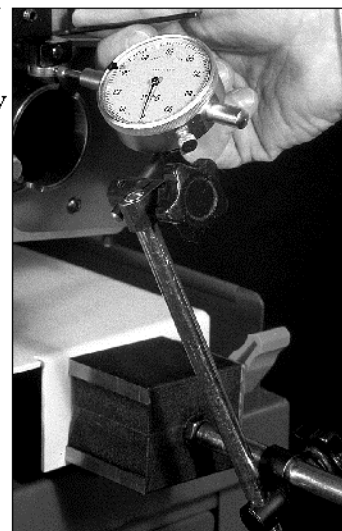


**NOTE:** If any problems occur with the sharpening assembly that can not be repaired or adjusted in house, this assembly can be quickly & easily removed from the main machine and returned to the factory for repair or adjustment. (see removal below)

### TO REMOVE SHARPENING ASSEMBLY:

First- unplug the machine.

- Remove the front and top cover as described on this page, in the paragraph titled "CENTERING THE POINT SPLITTER".
- Separate the wire connector that goes to the sharpening port motor.
- Separate the wire connector that goes to the optical sensor located next to the sharpening port.
- Unplug the two air hoses at the air cylinder speed control valves as described in the next paragraph titled, "SHARPENING PORT".
- Unscrew the point angle lock knob completely and remove it. Pull the complete assembly straight down approximately

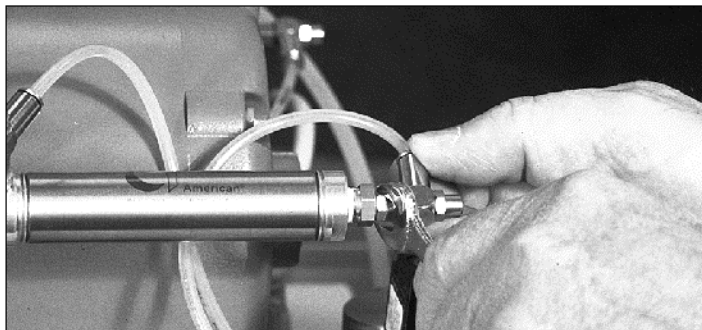
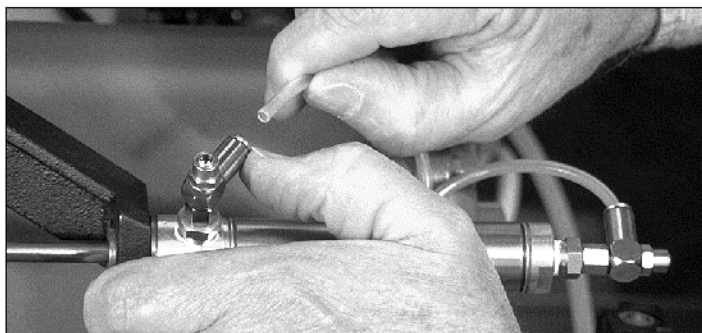


5/8", and away from the grinding motor to remove it from the motor wheel guard casting. The air hoses and fittings are color coded to allow correct reassembly.

## 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. Remove hoses and unscrew these valves from the air cylinder-as illustrated below- disassemble them and make sure the small air ports are clear, (See photo below). 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:

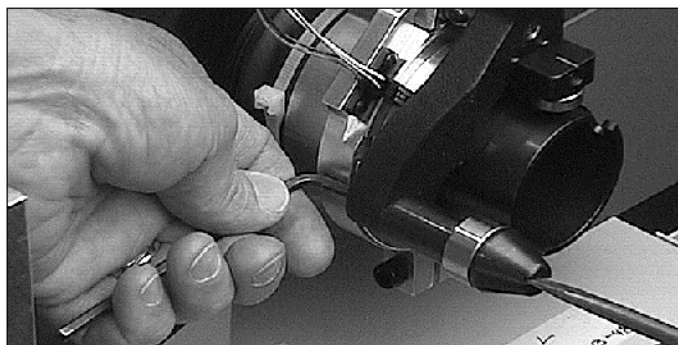
Sharpening port speed control valve adjustment: If the sharpening port appears to move- too fast or slow forward and /or rearward, then the valve speed control screws will need to be adjusted. The cylinder rod speed is controlled by the air exhaust rate rather than the basic pressure on the piston. The 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 align-

ment unit. Make 2 turns CCW to open — for the sharpening port. If the speed needs to be increased more, then unscrew the adjustment screw another 1/4 turn counterclockwise - 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.

## 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 CCW. 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" CCW.



## 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.

### NOTE:

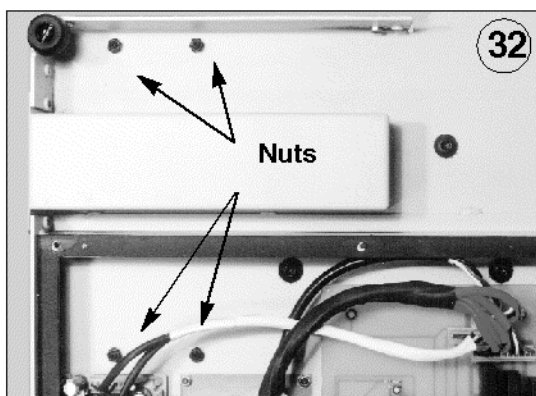
**ALIGNMENT PROBLEMS:** If the alignment assembly is not working properly and the problem has been discussed with the factory and the problem has been traced by the operator, with no solution. If a consensus has been reached by the factory that they will need to repair the alignment assembly, it can be removed from the AP-5000 sharpener main frame and sent in for repair and re-calibration.

### TO REMOVE ALIGNMENT ASSEMBLY:

A. Unplug the machine.

B. Remove the front cover and top cover as described on page (7), paragraph titled "CENTERING THE POINT SPLITTER".

- C. Separate the electrical connectors that go to the two stepper motors that are mounted at the rear plate of the alignment assembly.
- D. Separate the electrical connector that goes to the alignment light.
- E. Unplug the two air hoses at the air cylinder speed control valves as described on page (8), in paragraph titled "SHARPENING PORT".
- F. Set the complete sharpener on its back to access the bottom cover.
- G. Remove the 8 screws holding the bottom plate on the base of the sharpener and remove the bottom cover plate, ( See photo # 31 below). Four 3/8" self locking nuts will be visible that are directly below the alignment assembly, (See photo #32 below). While holding on to the alignment assembly to prevent it from falling - now unscrew and remove the nuts and pull the complete alignment assembly away from the base of the unit. The electrical connectors can not crossconnect and the air hoses and fittings are all color coded so as to provide correct reassembly of the unit.



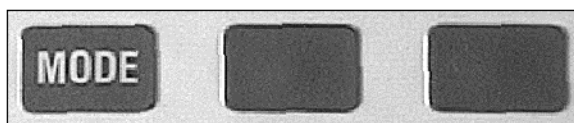
## MACHINE ADJUSTMENTS (Electrical)

### LIQUID CRYSTAL DISPLAY LANGUAGE AND METRIC SETTINGS:

To change the display to different languages and metric settings proceed with the following. (This feature is only on units that display "CALIBRATING...3.0 or 3.XX" when turned on). 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

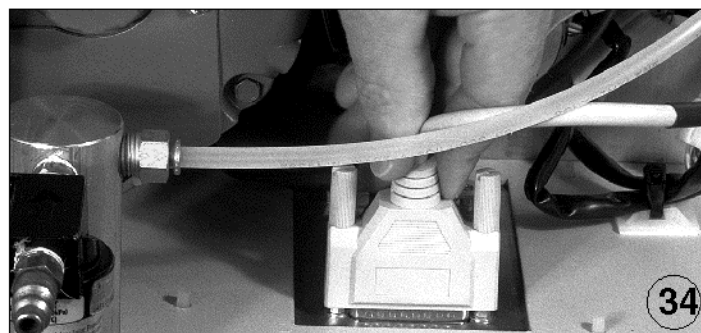
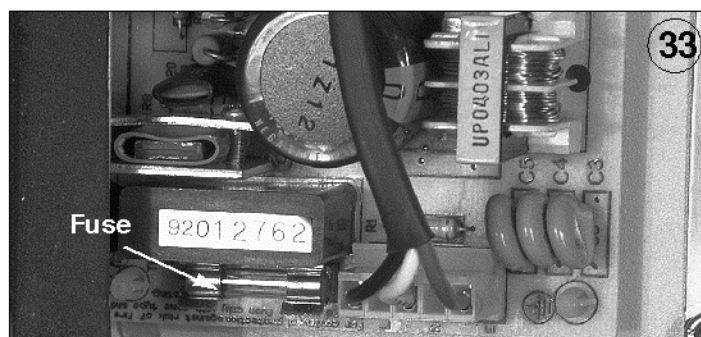


		English
		English Metric
		Japanese Metric
		German Metric
		Spanish Metric
		French Metric
		(open)

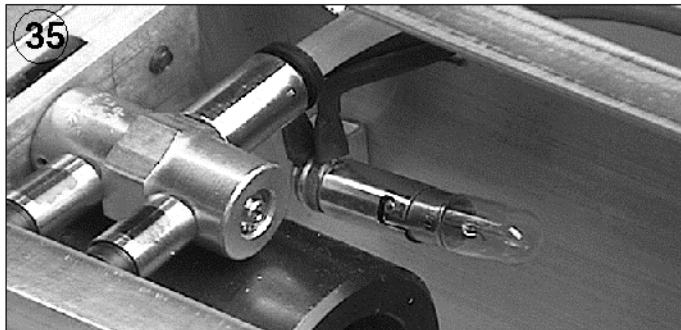
### LCD DISPLAY NOT LIGHTING:

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 your facing the unit. (See photo #33 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 #34 below)



**ALIGNMENT LIGHT NOT ON:** When the machine is turned on and the alignment light does not come on, however the LCD is still on. Probably 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 # 35 below). Remove the bulb to see if the filament is burned out. For replacement, the bulb is 13 volt - 3.8 watt (Part # PP10294EF).

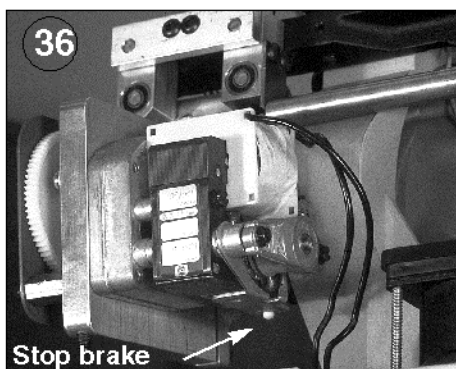


## MACHINE SHUTS DOWN ALL ELECTRICAL ITEMS:

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.

First 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 # 36 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.



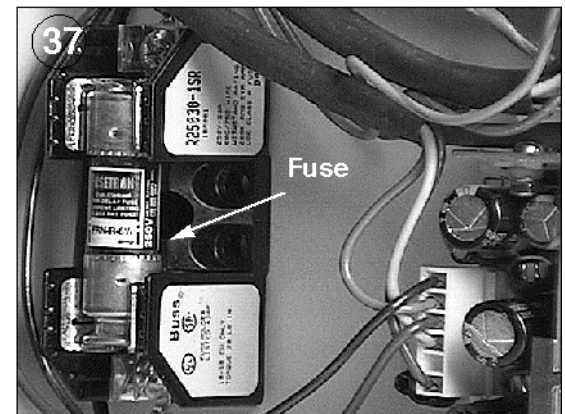
- C. Rotate the alignment stepper motors by pushing on the gears to make sure they move freely.

## 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 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)

**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 37 above).

6. After inserting the fuse, reinstall the bottom plate and screws. Set the machine back on to 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 customer service.

# AP-5000 CLEANING - MAINTENANCE INSTRUCTIONS

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

**GRIT TRAY:** 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 on page (7) 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. (See page (4) for cleaning instructions.)

## A VACUUM TUBE IS PROVIDED WITH THE MACHINE!

**NOTE:** An important recommendation is to INSTALL A VACUUM SYSTEM to this unit. Due to the grinding volume this unit is capable of producing, a vacuum system will aid in maintaining a much cleaner, trouble free sharpener.

**POINT SPLITTER:** Look down the port of the point splitter and if a certain amount of grindings are apparent, take the provided Point splitter adjustment wrench/Cleaning brush, (See below), insert the "Brush end" inside the tube and rotate several times. 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:** If any blackening or burning of the drill tip appears on the drill point in either the sharpening process or the point splitting process, a wheel may need to be changed. The machine contains two (2) wheels, one is the main grinding wheel, CBN - borazon, 135 degree (#PP02115GF). The other is the point splitting wheel, CBN - borazon (#PP02110GF). The point splitting wheel can be reversed which will produce twice the life. See page (5) for wheel changes.

**NOTE:** When in the grinding of small drills approximately 1/8" size, 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.

**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 cen-

ter grinding process within the machine. To eliminate this from occurring please make sure to follow the procedures in the next paragraph!

**CHUCK TUBE:** Inspect the chuck tube occasionally for grinding dust buildup. Periodically swab this tube with the provided wrench/brush. Insert the brush into the tube and rotate several times to remove grinding particles. No lubrication is needed inside the chuck tube.

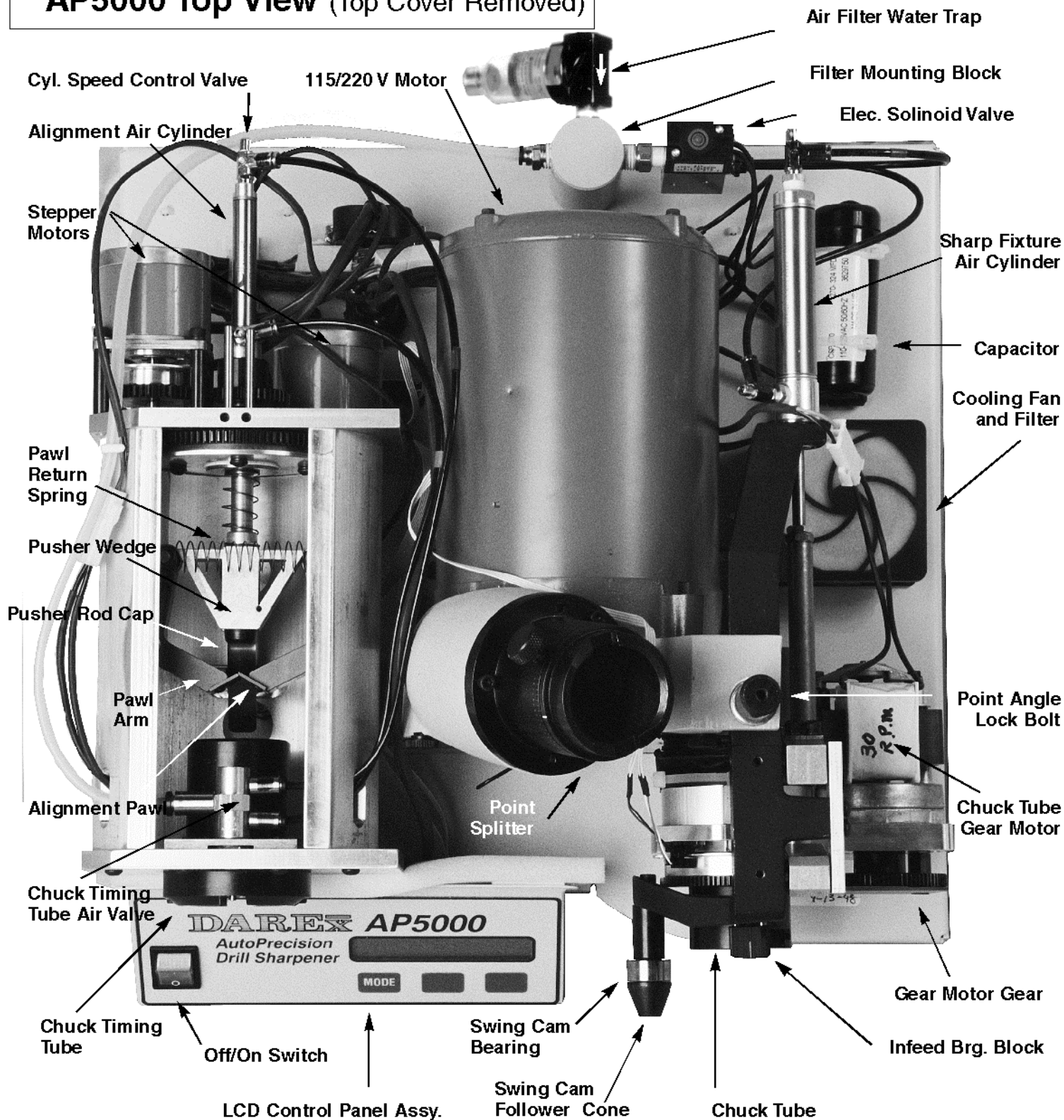
**MAIN MACHINE COVER - Cleaning underneath:** Every couple of months the front cover and main machine covers should be removed from the machine and any grinding residue removed from the working components. Brush or vacuum from around the electrical plugs and sockets, crevices, and any other areas that 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.





# AP5000 Top View (Top Cover Removed)



# AP-5000 CHUCK MAINTENANCE & ADJUSTMENT GUIDE

## AP-5000 CHUCK MAINTENANCE & ADJUSTMENT GUIDE

### Disassembly

Install chuck knob flats (A) in a vise. Set wrench jaws on the collet flats, (B) and loosen about 1/4 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. Turn the sleeve, at the knob end of the chuck, counterclockwise to remove it from the closing screw, and in the process, the closing screw will exit out of the front of the chuck.

.Important note: If the jaws need to be removed, they must be marked in their respective locations, so as to go back in the same slots.

Clean the closing screw and sleeve threads in an oil-less solvent such as lacquer thinner or acetone, to remove any grit, filings and oil. A small brass brush aids this cleaning process.

Prior to reassembly, apply the following recommended lubricant: This product is called - CRC TECHNICAL GRADE 3-36, #03003. If this product can't be located locally, call CRC at 1-800-272-4620 and they will inform you of a local supplier of this product. If this item can not be found in your immediate area, contact the Darex customer service department at 1-800-547-0222 and they will assist you on this item.

Apply a very small amount of this lube to the closing screw threads only.

To reassemble, reverse the disassembly process. ( Be sure to tighten the chuck knob firmly so it will grip the sleeve securely.)

To remove cams from the chucks: First with needle nose pliers pull the springs out of the cams. Insert the chuck into the alignment tube as shown on page (3). Place the chuck wrench on the body flats (area C above), rotate the wrench counterclockwise to loosen the cam, unscrew and remove over the nose of the chuck. Reinstall the reverse of the disassembly. Push the cam springs back into the holes in the cams.

Problem: Chuck open and closes with difficulty!

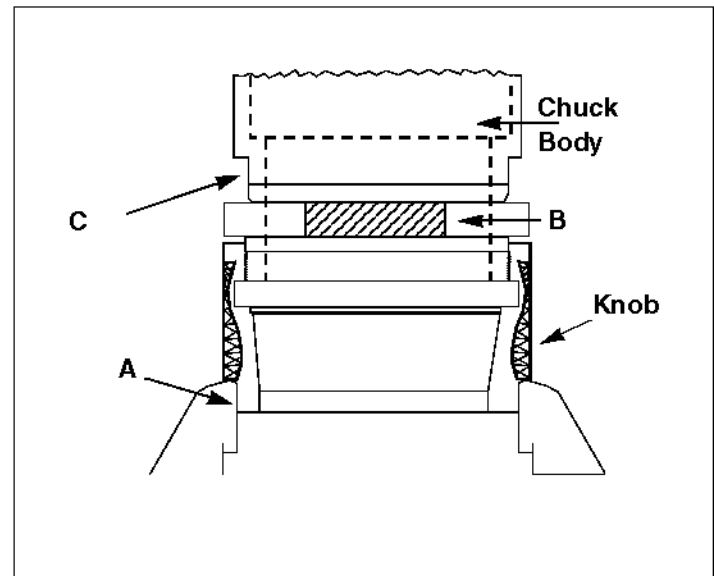
- A. Make sure threads are free of grinding particles, and not damaged.
- B. Check the jaw springs, make sure they are pushed all the way into the holes of the closing screw.

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 or return the chuck to the factory for repair.

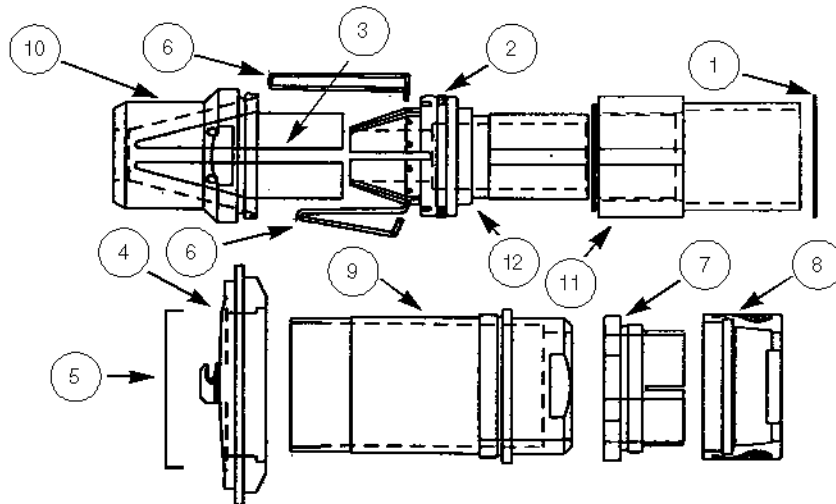
Problem: Chuck won't grip drills tightly enough!

- 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 above figure), 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.

# ON DWG	PART#	DESCRIPTION	PRICE
1.	PP02404SF	¼", 5/8", & 1" THRUST WASHER	\$8.00
2.	PPO3640NF	CHUCK FELT SEAL (ALL CHUCKS)	\$8.00
3.	SA02415SA	¼" CHUCK JAWS (4)	\$25.00
3.	SA02425SA	5/8" CHUCK JAWS (6)	\$25.00
3.	SA02452SA	1" CHUCK JAWS (10)	\$25.00
4.	PP10600TF	1/16" - 1/4" "SPLIT POINT" CHUCK CAM	\$95.00
4.	PP10620TF	¼" - 5/8" "SPLIT POINT" CHUCK CAM	\$95.00
4.	PP10640TF	5/8" - 1" "SPLIT POINT" CHUCK CAM	\$95.00
4.	PP10644TF	5/8" - 1" ALT. 118 DEG. CAM - ADDED RELIEF	\$95.00
4.	PP10604TF	1/16" - 1/4" LH "SPLT. PNT." CHUCK CAM	\$95.00
4.	PP10624TF	¼" - 5/8" LH "SPLT. PNT." CHUCK CAM	\$95.00
5.	PP10650RF	CHUCK COMPRESSION SPRNG ( ALL CHUCKS)	\$3.00
6.	SA03520RA	¼" CHUCK JAW SPRINGS (4)	\$15.00
6.	SA02421RA	5/8" CHUCK JAW SPRINGS (6)	\$15.00
6.	SA02450RA	1" CHUCK JAW SPRINGS (10)	\$15.00
7.	PP02444TF	CHUCK KNOB COLLET	\$10.00
8.	PP02446T	KNURLED CHUCK KNOB	\$15.00
9.	SA02405TA	¼" CHUCK BODY / KEY	\$35.00
9.	SA02405TA	5/8" CHUCK BODY / KEY	\$35.00
9.	SA02445TA	1" CHUCK BODY / KEY	\$35.00
10.	PP02400TF	¼" CHUCK NOSE	\$25.00
10.	PP02420TF	5/8" CHUCK NOSE	\$25.00
10.	PP02440TF	1" CHUCK NOSE	\$25.00
11.	PP02401TF	¼" CHUCK SLEEVE	\$25.00
11.	PP02421TF	5/8" CHUCK SLEEVE	\$25.00
11.	PP02441TF	1" CHUCK SLEEVE	\$25.00
12.	PP02402TF	¼" CLOSING SCREW	\$35.00
12.	PP02422TF	5/8" CLOSING SCREW	\$35.00
12.	PP02442TF	1" CLOSING SCREW	\$35.00
NOT SHOWN	SA10600TA	1/16" - 1/4" "SPLIT POINT" CHUCK COMPLETE	\$230.00
NOT SHOWN	SA10620TA	¼" - 5/8" "SPLIT POINT" CHUCK COMPLETE	\$230.00
NOT SHOWN	SA10640TA	5/8" - 1" "SPLIT POINT" CHUCK COMPLETE	\$230.00
NOT SHOWN	SA10604TA	1/16" - 1/4" LH SPLT. PNT. CHUCK COMPLETE	\$230.00
NOT SHOWN	SA10624TA	¼" - 5/8" LH SPLT. PNT. CHUCK COMPLETE	\$230.00
NOT SHOWN	SA10606TA	1/16" - 1/4" "SPLIT POINT" MORSE TAPER #1 CHUCK	\$255.00
NOT SHOWN	SA10626TA	¼" - 5/8" "SPLIT POINT" MORSE TAPER #2 CHUCK	\$255.00
NOT SHOWN	SA02604TA	1/16" - 1/4" MORSE TAPER #1 CHUCK-NO CAM	\$175.00
NOT SHOWN	SA02624TA	¼" - 5/8" MORSE TAPER #2 CHUCK-NO CAM	\$175.00
NOT SHOWN	SA02602TA	1/16" - 1/4" CHUCK - NO CAM	\$149.00
NOT SHOWN	SA02622TA	¼" - 5/8" CHUCK - NO CAM	\$149.00
NOT SHOWN	SA02642TA	5/8" - 1" CHUCK - NO CAM	\$149.00

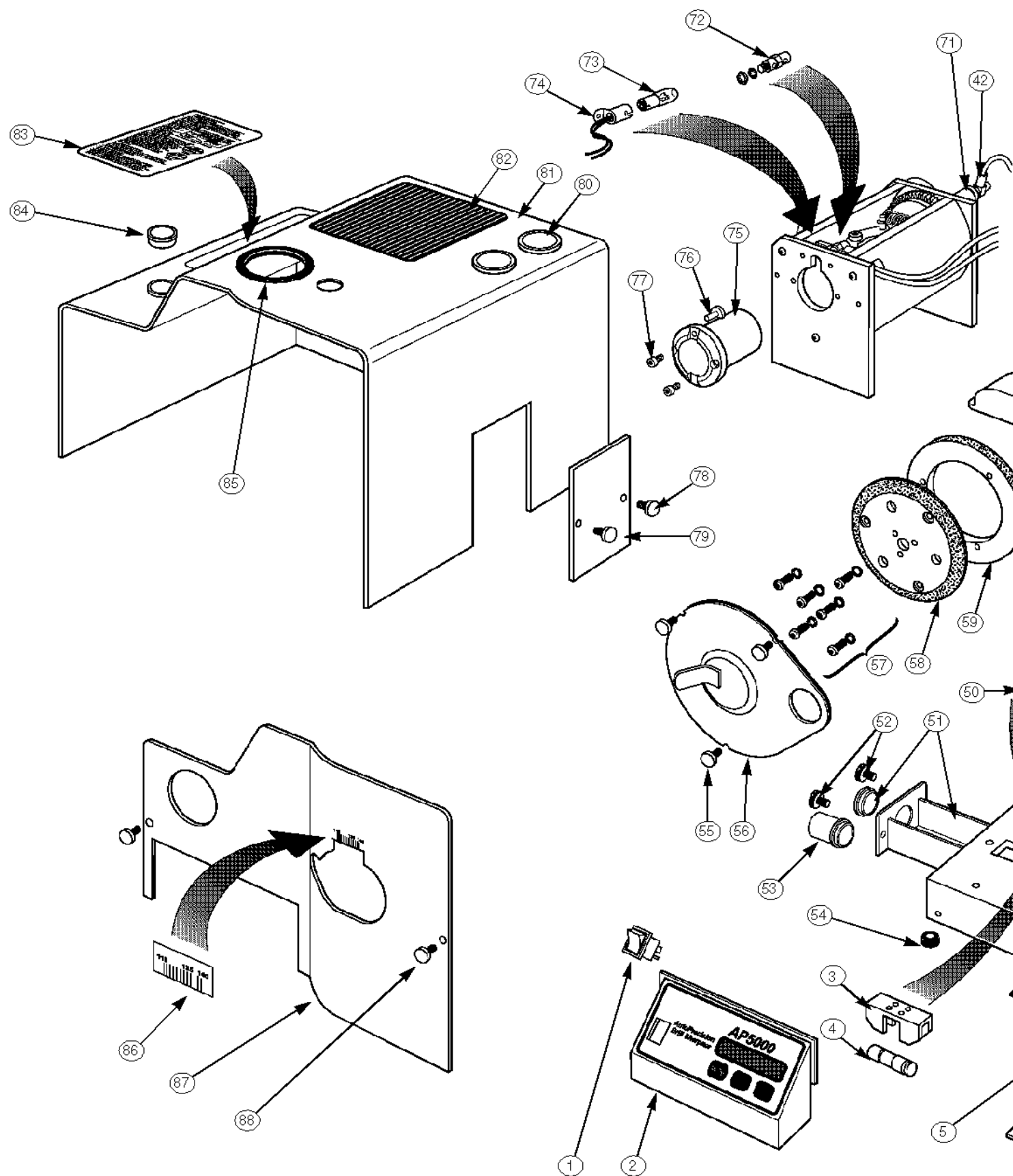


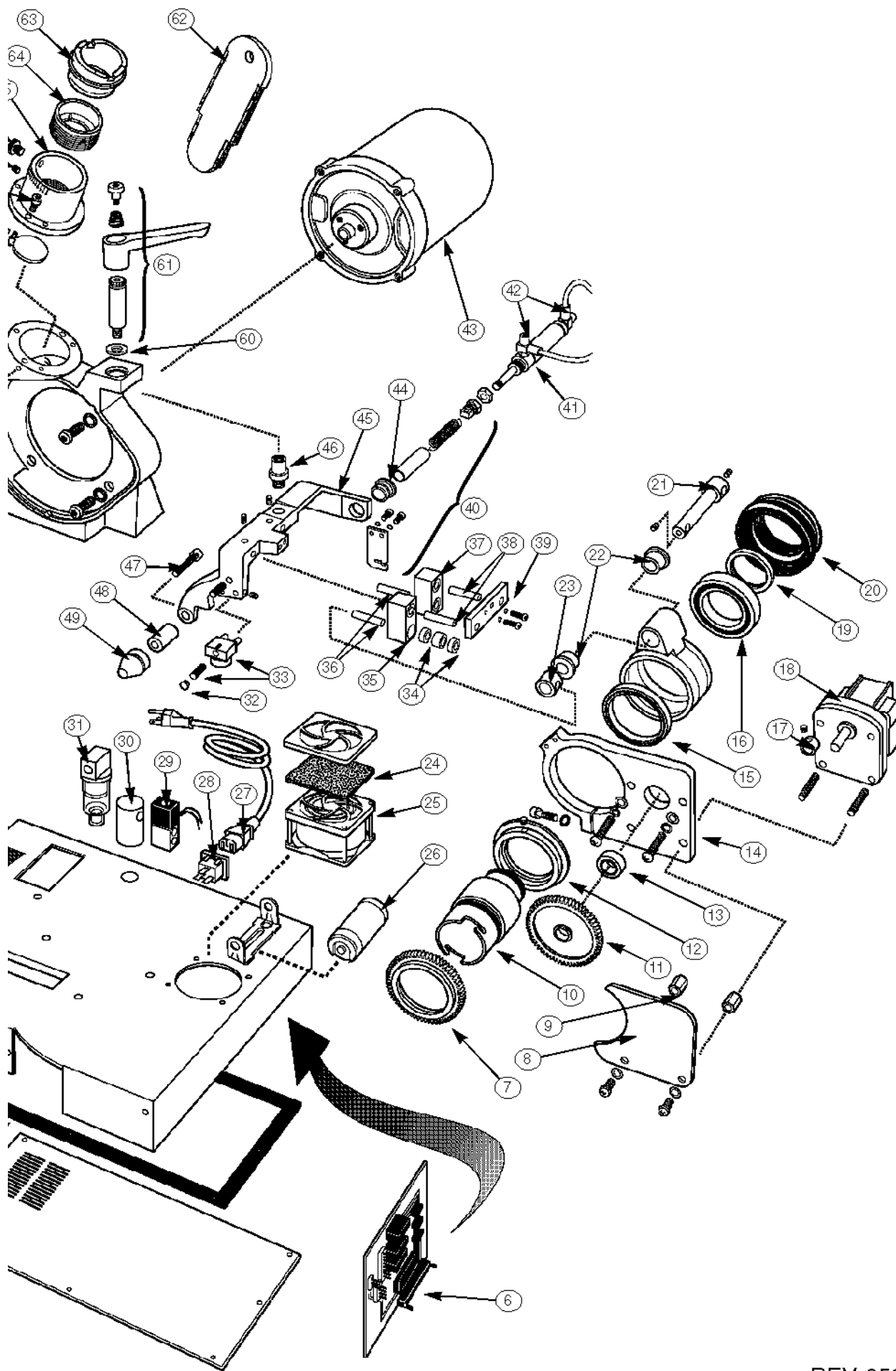
## AP- 5000 Parts List

1	PP02164EF	115/220 Volt On/Off Switch	\$8.00	48	PP10525TF	Cross Feed spacer Post	\$12.00
2	SA10056EF	LCD Control Panel Assy.	\$279.00	• 49	SA10524TA	Swing Cam Follower Cone/Bearing	\$24.00
3	PP10018EF	Fuse holder	\$19.00	• 50	SPECIAL	Fuse 2 Amp 250V GMA(Pwr. Sply.)	\$2.00
• 4	PP10016EF	Fuse, Bussman FRN-R, 6-1/4 Amp	\$9.00	51	SA10110SA	Grit Tray Assy.	\$45.00
5	PP10044PF	Elec. Bottom Cover Gasket	\$5.00	52	SA10310PA	Thumb Screw	\$9.00
6	PP10004EF	Logic Board	\$199.00	53	PP02175TF	Grit Tray Vacuum Tube	\$5.00
7	PP10474LF	Chuck Tube Gear	\$49.00	54	PP08684PF	Rubber Foot	\$1.00
8	PP10478SF	Gear Mtr. Guard	\$12.00	55	SA10310PA	Thumb Screw	\$9.00
9	PP10476TF	Gear Mtr. Grd. 7/16" Spacer	\$1.00	56	SA10304SA	Whl. Grd. Cover & Gskt.	\$35.00
10	PP10450TF	Chuck Tube	\$79.00	57	SA10370FA	Whl. Screws/ Wshrs.(6 Each)	\$9.00
11	PP10472LF	Gear Motor Gear	\$39.00	• 58	PP02115GF	135 Degree CBN Grinding Whl.	\$189.00
12	PP10273TF	Material removal sensor wheel	\$23.00	• 59	PP02120GF	Point Split Whl. CBN	\$179.00
13	PP10463NF	Gear Motor Seal	\$3.00	60	PP08742FF	3/8 SAE Flat Washer	\$1.00
14	PP10456BF	Gear Motor Supp. Plate	\$39.00	61	PP10542TF	Pnt. Ang Lck Blt/Hndl./Scrw./Sprg.	\$29.00
15	PP10462LF	Drive Tube Nose Brg.	\$29.00	62	SA10109SA	Pnt. Splt. Adj. Tool/Brush	\$29.00
16	PP10460LF	Drive Tube Body Brg.	\$49.00	63	PP10316TF	Splitter Stop Tube	\$39.00
17	PP10281TF	Gear Mtr. Seal Sleeve	\$2.00	64	PP10312TF	Splitter Adj. Nut	\$19.00
18	PP10464EF	115 Volt Chuck Tube Gear Mtr.	\$89.00	65	PP10310TF	Point Split Adj. Tube	\$49.00
18	PP10465EF	230 Volt Chuck Tube Gear Mtr.	\$104.00	66	PP10318TF	Adj. Sleeve Lock Knob	\$6.00
19	PP10452TF	Chuck Tube Retaining Nut	\$6.00	67	PP10311FF	10-24x3/16 Brass SHSS	\$1.00
20	PP10454PF	Bellows Seal	\$39.00	68	PP10314FF	Pnt. Splt. Tube Scrw. BHCS	\$1.00
21	PP10490TF	Pivot Arm Support Pin	\$16.00	69	SA10518SA	Pnt. Split Grit Flap Assy.	\$19.00
22	PP10492LF	Oilight Flange Bushing	\$3.00	70	PP07108FF	8-32 x 3/16 HSSS Cup Pnt.	\$1.00
23	PP10488TF	Pivot Arm Support Pin Sleeve	\$3.00	71	PP10264NF	Alignment Air Cylinder	\$39.00
24	PP10035NF	Cooling Fan Filter	\$2.00	72	PP10212NF	Chk. Timing Tube Air Valve	\$24.00
25	PP10034EF	115 Volt Cooling Fan	\$49.00	• 73	PP10294EF	13 V 3.8 Watt Alignment Lamp	\$2.00
25	PP10032EF	230 Volt Cooling Fan	\$47.00	74	PP10292EF	Lamp Socket	\$11.00
26	PP10024EF	115 Volt Capacitor	\$7.00	75	PP10208TF	Chuck Timing Tube	\$24.00
26	PP10028EF	230 Volt Capacitor	\$9.00	76	PP10206TF	Air Valve Push Pin	\$3.00
27	PP10144EF	115 Volt Cord Set	\$9.00	77	PP02132FF	10-24x 3/4 SHCS	\$1.00
27	PP10148EF	230 Volt Cord Set	\$11.00	78	SA10310PA	Thumb Screw	\$9.00
28	PP10140EF	AC Receptical	\$4.00	79	PP10124SF	Fan Access Cover	\$17.00
29	PP10082EF	115 Volt Elec. Air Solenoid Valve	\$88.00	80	PP10108TF	Chuck Holding Cup	\$14.00
29	PP10083EF	230 Volt Elec. Air Solenoid Valve	\$116.00	81	PP10120SF	Top Cover	\$189.00
30	PP10080BF	Filter Mounting Block	\$6.00	82	PP10050PF	Tool Mat	\$3.00
31	PP09028NF	Air Filter/ Water Trap	\$39.00	83	PP10048DF	Oper. Instr. Plate (English)	\$8.00
32	PP06448PF	1/4" Dome Plug (Infd. Blk.)	\$1.00	84	PP10126TF	View Port Tube	\$3.00
33	SA10536BA	Infeed Brg./Blk./ Screw	\$39.00	85	SPECIAL	Top Cover Tube Boot	\$3.00
34	PP08560LF	Pivot Arm Brg.(1), (4 Rqd.)	\$4.00	86	PP10320DF	Point Angle Decal	\$2.00
35	PP10494BF	Front Pivot Arm	\$4.00	87	PP10130SF	Front Cover	\$59.00
36	PP10502FF	1/4" x 1 3/4" Dowel Pin (Btm.)	\$1.00	88	SA10310PA	Thumb Screw	\$9.00
37	PP10496BF	Rear Pivot Arm	\$4.00	Not Shown	PP02028RF	Wedge Extrusion Spring	\$3.00
38	PP10500FF	1/4" x 2" Dowel Pin (Top)	\$1.00	Not Shown	SA02028RF	Carbide Alignment Pawls (2)	\$44.00
39	PP10506BF	Pivot Arm Support Plate	\$7.00	Not Shown	PP02079TF	Pawl Mounting Bolt	\$5.00
40	SA10508RA	AP S.P.C. Ext. Sprg./Tube/Nut	\$49.00	Not Shown	PP02082RF	Pawl Arm Return Spring	\$8.00
41	PP10514NF	Sharp. Fixt. Air Cylinder	\$69.00	Not Shown	PP08560LF	Wedge Follower Bearing	\$4.00
42	PP10266NF	Cyl. Speed Control Valve	\$19.00	Not Shown	SA02076XA	Pawl Arm Extr./ brg.	\$42.00
43	SA10350MA	115 Volt Motor / Hub Assy.	\$189.00	Not Shown	PP10232TF	Wedge Tube	\$6.00
43	SA10353MA	230 Volt Motor / Hub Assy.	\$189.00	Not Shown	PP10234XF	Pusher Wedge	\$16.00
44	PP10516TF	Cyl. Attach. Bushing	\$3.00	Not Shown	SA10236TA	Pusher Rod Cap/ Nut	\$14.00
45	PP10400CF	Support Bar Casting	\$59.00	• Not Shwn	PP10590KF	AP-5000 Operators Manual	\$9.00
46	PP10544TF	Support Bar Pvt. Bushing	\$5.00				
• 47	SA10532FA	Swing Cam Follower Bolt	\$9.00				

Rev. 5/08/98

• Suggested Dealer Stock Parts





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