

# **TDR/SRD Drill Grinders**

**Model 82-R**



## **Instructions & Engineering Data**

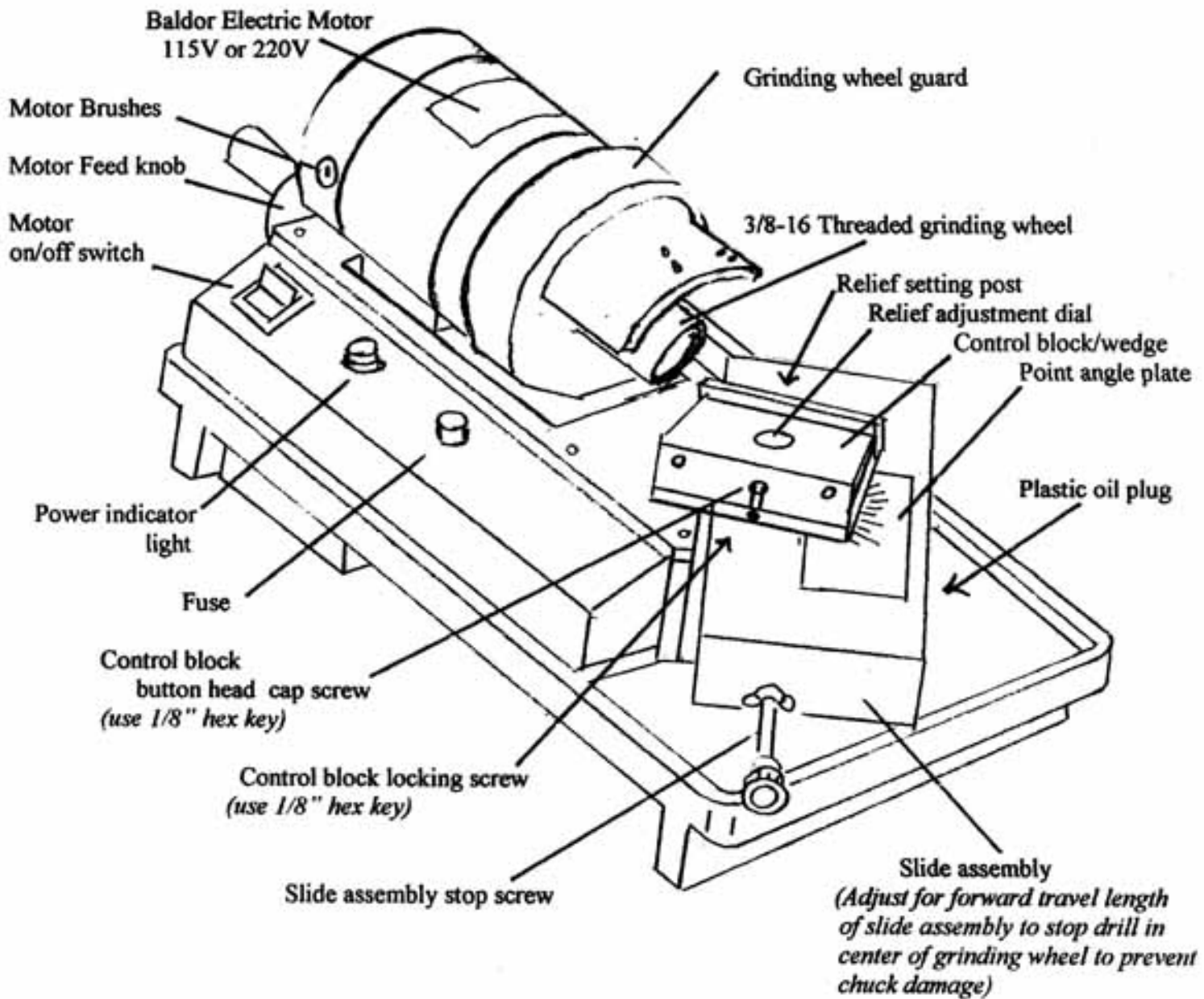
- ~ **Sharpen drills in 60 seconds**
- ~ **Adjusts automatically between drill sizes**
- ~ **Radial relief on all tools**
- ~ **Simple to learn ~ simple to operate**

Manufactured by:

**Service Precision Grinding Co., Inc.**  
2113 Route 31  
Port Byron, NY 13140 USA

Phone ~315-776-9602 ~ Fax~315-776-9603

## Model 82-R TDR/SRD DRILL GRINDER



**(FIG #1)**

Dimensions 10"Wx16"Lx8"H ~ Weight 50 Lbs. ~ Cast iron, aluminum & steel construction ~ All models built to satisfy industrial quality ~ Totally enclosed Baldor motor 115V or 220V ~ Hardened and ground slide rails ~ All movable parts are kept free of grinding dust ~ Serialized and inspected drill chucks ~ Drill point concentricity is .001" lip to lip ~ Hardcoated aluminum fixtures for extended life ~ Increased versatility with additional fixtures ~ Precise results ~ Angle range 85 degrees to 160 degrees ~ Relief angles 0 degrees to 20 degrees ~ Made in the USA

**Customize point angles and clearances to achieve the most efficient feed rates for your job.**

*Add on accessories & grinding wheels are listed on page 7*

## NEED TO KNOW & SETUP

### **WARRANTY:**

All machines manufactured by Service Precision Grinding Co., Inc. carry a one year warranty against defective parts or workmanship. Technical and service information is available directly from the manufacturer.

### **CAUTION:**

Safety glasses must be worn when using this grinding machine. Safety Regulations normally required must be adhered to when using this machine as any other machine you operate.

### **WARNING:**

To avoid the affects of dust from grinding please follow normally required procedures for health and safety. Grinding generates dust which can affect breathing functions.

### **MACHINE MAINTENANCE:**

The top slide oil has been drained for shipment. Remove the plastic oil reservoir plug (Fig #2) Replace oil with standard S.A.E. 30 weight oil. (*correct level is bottom of refill hole*).

Weeping oil from the slide assembly rails (Fig #2) is normal and serves to keep slide rails free of grinding dust. It is not necessary to maintain the oil level at all times. The slide assembly will be lubricated as long as there is some oil in the reservoir.

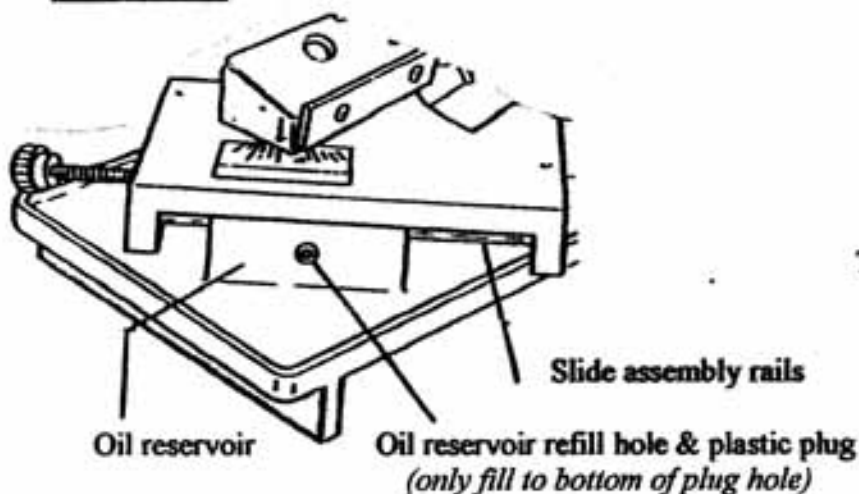
Occassional lubrication of the motor lead screw can be done by dropping oil thru the 1/4" hole in the sheet metal (Fig #1) near the motor feed knob. The motor feed knob can be lubricated directly by dripping oil between the knob and the base casting then rotating the knob several times.

Disconnect the power supply before inspecting motor brushes (Fig #1) for possible replacement. Motor brushes should be replaced when length is less than 1/4" long.

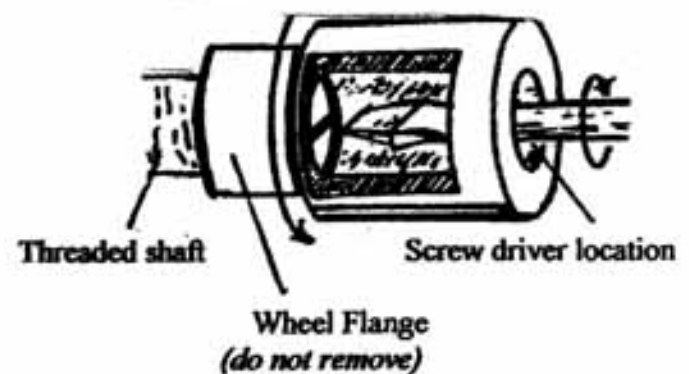
### **GRINDING WHEELS:**

With the machine power off, locate a screw drive in the slot at the end of the motor shaft found inside the grinding wheel (Fig #3). Hold the wheel with your free hand and unscrew it from the shaft. This is a right threaded motor shaft. Screw on the replacement wheel till it butts up against the wheel flange (Fig #3). Vitrified wheels require that a paper blotter be in place between the wheel and the flange. Paper blotters are not used for diamond wheels. During normal grinding operations there is no need to dress the grinding wheels. Use only abrasive wheels designed and made for TDR/SRD Drill Grinders.

**(FIG # 2)**

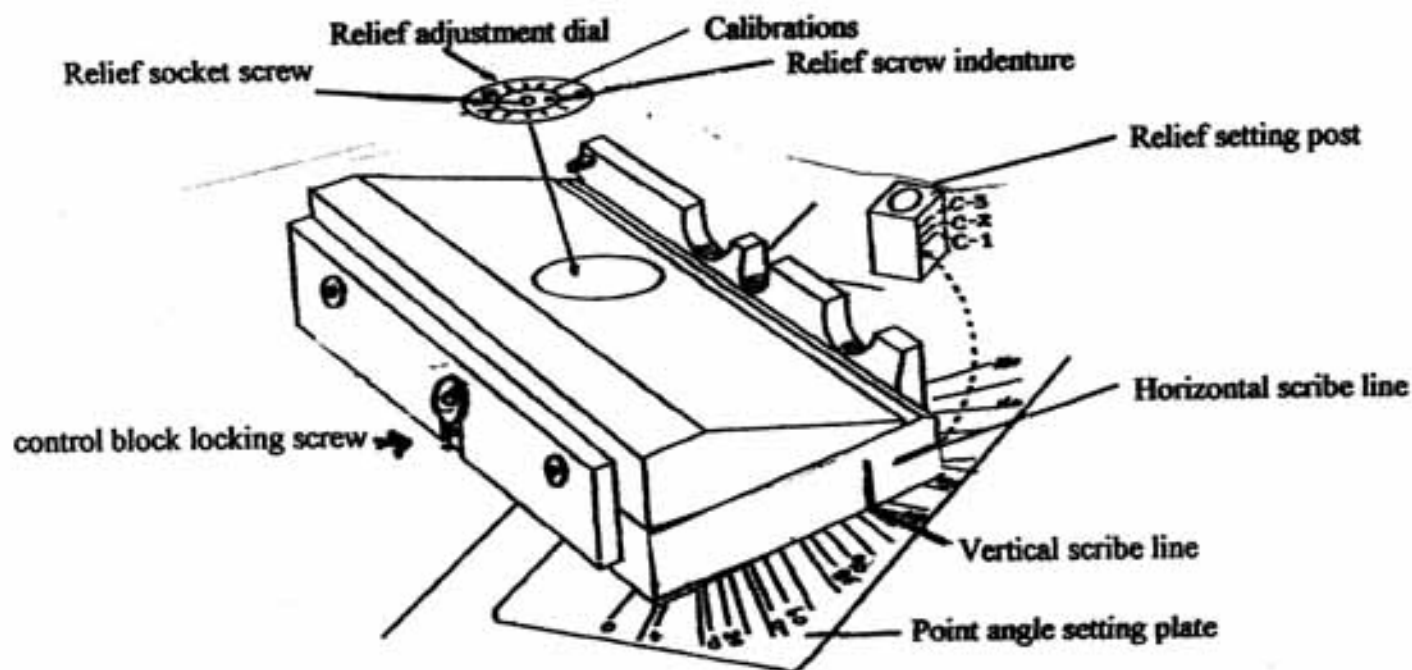


**(FIG # 3)**



## CONTROL BLOCK SETTINGS

The control block raises, lowers and rotates. Different settings change the relationship of the drill cutting edge to the wheel. The 1/8" hex key is used to loosen the control block locking screw. When the control block is unlocked point angles can be changed by aligning the vertical scribe line on the side of the block with the desired point angle on the point angle setting plate. Turn the control block to choose point angles from 85 degrees to 160 degrees. The horizontal line and the relief setting post are used, in combination, to set approximate clearance angles for tool sharpening. The calibrations on the relief adjustment dial allows for precise adjustments to the cutting edge clearance on tooling to be sharpened. The small indenture on the relief screw is lined up with the appropriate calibration on the dial by inserting the 1/8" hex key down into the relief screw socket, holding the control block, and turning the hex key. The figure below shows the setting for sharpening a standard twist drill at 118 degrees point angle with a standard 10 degrees clearance; C on the dial and C-1 on the relief post. The figure shows the three settings in their "home" positions and all setting changes start from that home position. All TDR/SRD drill sharpeners are shipped at the standard settings. The control block locking screw also locks the relief dial settings.



**( FIG # 5 )**

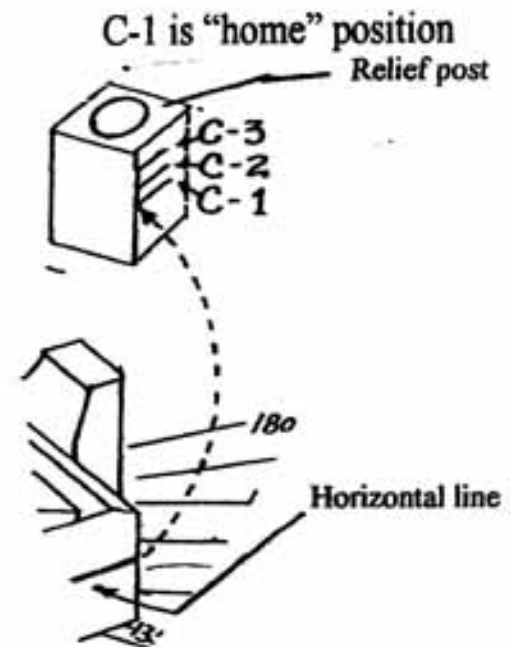
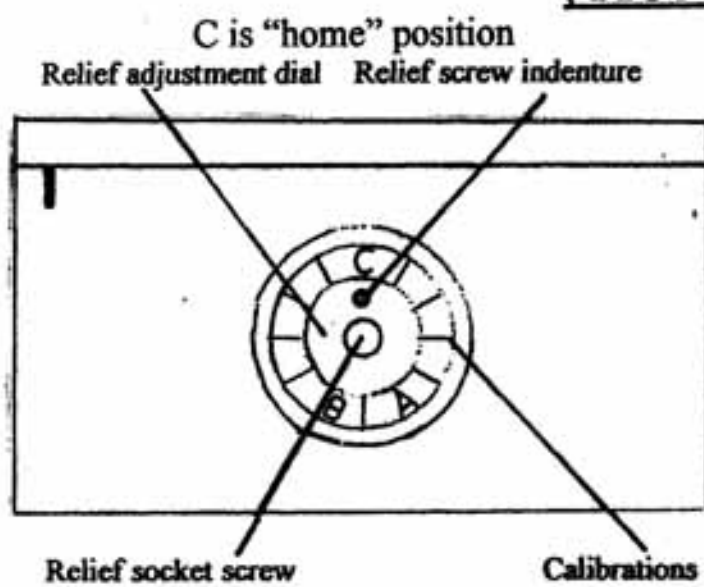
### ADJUSTING POINT ANGLES & CLEARANCES

There is no need to adjust the settings every time you change drill sizes. To get the proper clearance settings, for various tooling, the relief adjustment dial, may at times, work in combination with the relief post. All adjustments are made from the "home" positions. Unlocking the control block screw also unlocks the relief adjustment screw. To raise the control block to the C-2 position, use the 1/8" hex key and turn the relief screw clockwise one full turn. The relief scribe line will now line up with C-2 on the relief post. Turn again and the relief line will be at the C-3 setting. To return to "home" turn the relief screw two turns counter clockwise. The C-1, C-2 & C-3 settings are approximate. The relief adjustment dial allows for precision relief adjustments. Turning the relief screw clockwise the tooling will have less clearance. Starting from "home" on the dial, C position, turn the screw indenture clockwise to the first



calibration beyond C on the dial. Always rotate the relief screw in a clockwise direction from the C setting when counting calibrations. This position is +1. The +2 position is the second calibration beyond C on the dial. Every calibration is a + number and may work in combination with the relief post settings. Used in combination a setting may be C-2 (relief post) +2 (relief dial) or C-1+A, C-1 (relief post) and +A (relief dial). Turn the screw indenture counter clockwise to return to "home" or go below C for more clearance. The control block locking screw also locks the relief dial.

( FIGS # 6 )



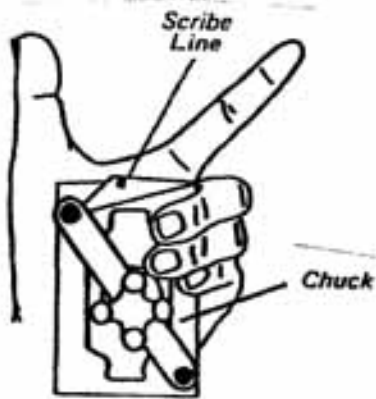
**Common Drill Point Angles & Clearance Settings**

<u>Drill Types</u>	<u>Control Block Settings</u>	<u>Lip Relief Settings</u>
Standard Twist Drill 118 degree point angle 10 degrees clearance	point angle at 118 degrees	C-1 C
Cobalt Drills 135 degree point angle 8 degrees clearance	point angle at 135 degrees	C-1 +A
Parabolic Drills 130 degree point angle 2 degrees clearance	point angle at 130 degrees	C-2 +2

It is generally agreed that less clearance on the tool the more accurate and rounder the hole. It will require more torque to cut but the tool will last longer. Make a note of favorite settings for repeating grinding geometry.

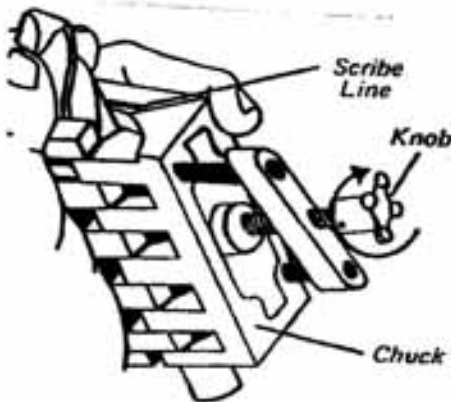
## **LOADING & GRINDING DRILLS**

**1/16" to 13/16"~(1.5mm~20.5mm)**



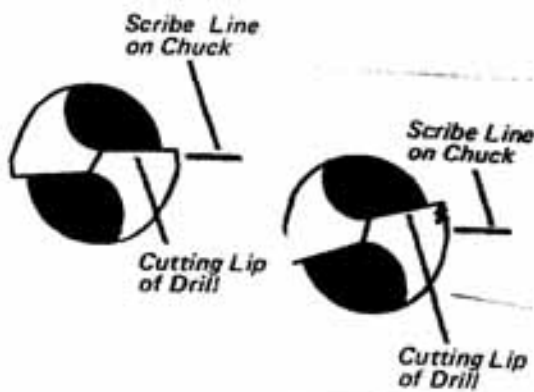
### **Step -1-**

The scribed lines on the face of the chuck are used to align the drill for sharpening. The alignment is done by eye. If the alignment is off it is not a concern as it affects the heel angle only. To load the drill hold the chuck in an upright position.



### **Step -2-**

The chuck is opened by turning the chuck knob counter clockwise then inserting the drill into the chuck face shank first.



### **Step -3-**

Turn the drill in the chuck to align the cutting edges slightly above the scribed lines on the face of the chuck. For badly worn or broken drills it may be necessary to have the cutting edge set beyond the scribe line.



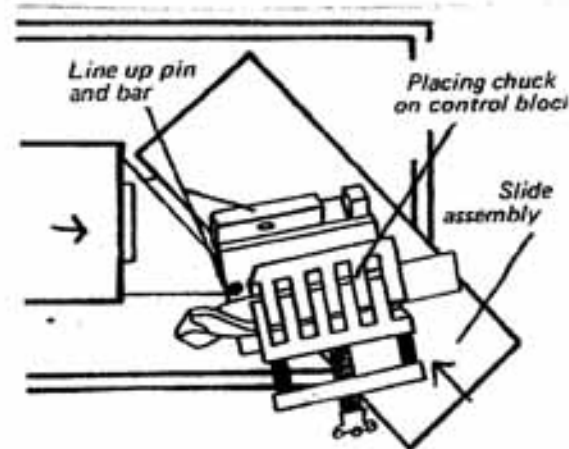
### **Step -4-**

Move the drill in or out of the chuck till the first margin of the drill is firmly engaged with the chuck. Clamping on the margin of the drill assures concentricity and absolute stability of the drill. Drills 1/4" and larger are clamped on the first margin, smaller drills are clamped on the second margin. Using the chuck knob lock the drill in place with a light touch.

**LOADING & GRINDING DRILLS**  
**1/16" to 13/16"~(1.5mm-20.5mm)**

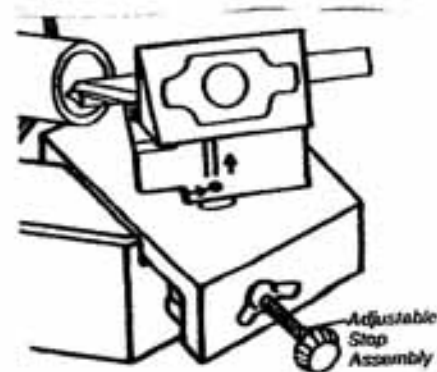
**Step -5-**

Position the side of the chuck on the control block with the knob facing the operator. While holding the chuck against the pin and back bar move the slide assembly forward and turn the motor knob to bring the wheel forward. Until the drill is just clearing the inside edge of the grinding wheel.



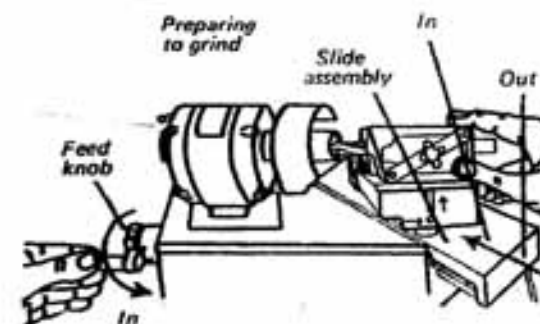
**Step -6-**

Adjust the slide assembly stop screw so that the drill passes all the way across the the face of the wheel at 8-9 o'clock. Setting the stop screw prevents the chuck from hitting the wheel during the forward stroke



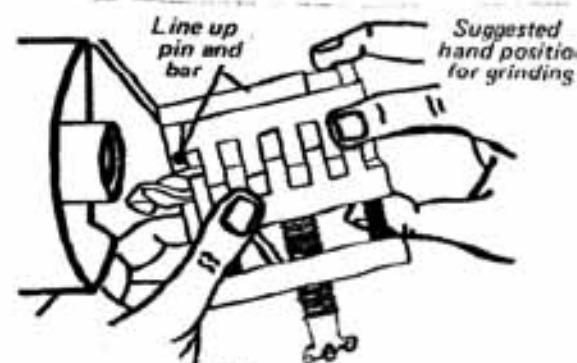
**Step -7-**

Put on safety glasses! Turn the motor on and while holding the drill chuck firmly against the pin and bar move the slide assembly back and forth passing the drill in and out of the wheel. Turn the motor feed knob until the drill and the wheel engage and sparks appear.



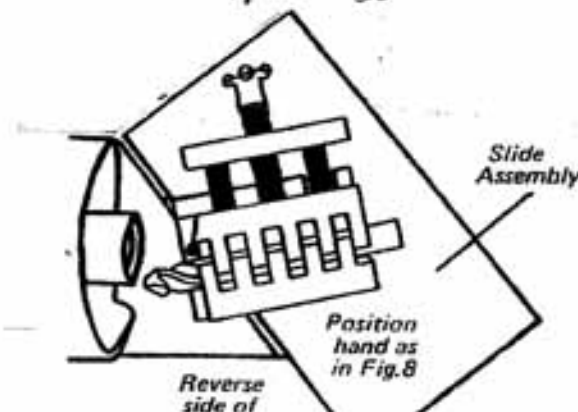
**Step -8-**

Using the suggested hand positions continue moving the drill across the wheel using a series of short and quick passes until the sparks appear faint.



**Step -9-**

Do not advance the feed knob and do not remove the drill from the chuck. Simply flip the chuck 180 degrees and sharpen the second lip as you did the first.



**Model 82-R TDR/SRD Drill Grinder**

**GRINDING WHEELS WITH 3/8-16thd ~ 82-R ACCESSORIES**

- 76-M-1790-P 1-3/8"OD ~ Std 90 grit wheel for HSS & Cobalt  
76-M-1760-P 1-3/8"OD ~ Fast cut 60 grit wheel for HSS & Cobalt  
76-M-1750-P 1-3/8"OD ~ 120 grit silicon/carbide wheel for carbide  
76-M-1770-P 1-3/8"OD ~ Diamond wheel for carbide  
76-M-7370-P 3/4"OD ~ 120 grit wheel for HSS & Cobalt  
*(PBOP/R replacement wheel or must be used with riser plate)*

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- PBOP/R Point Splitting Option ~ Point Split Drills 1/8"-1/2"  
TROP/R Tap-Reamer Option ~ Re chamfer Taps #10-3/4", Reamers 1/8"-1"  
LHOP/R Left-Hand Drill Drill Option ~ L.H. Drills 1/16"-1/2"  
80-S-7340-P Riser Plate ~ Enhances small drill relief ~ use with 80-M-7370-P  
76-M-1580-P ~ Standard Replacement Drill Chuck  
76-M-1582-P ~ Chuck for Taper Shank Drills

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