

300 COX STREET • P.O. BOX 318
ROSELLE, NEW JERSEY 07203

Phone: (201) 245-0505

OUR NEW AREA CODE 1(908)

FAX #: (201) 245-0504

INSTRUCTION MANUAL

SANFORD PRECISION SURFACE GRINDER

MODEL NO. _____

SERIAL NO. _____

This unit is wired for _____ volts
_____ phase _____ Hz Operation

SANFORD MANUFACTURING CORP.

INSTRUCTION MANUAL ASSEMBLY LIST

MODEL _____

SERIAL NO. _____

- 1) COVER SHEET
- 2) WARRANTY AND WARRANTY CARD FILLED IN
- 3) SPECIFICATIONS (Use Catalog Sheets Also Individual Price Sheet Of Machine With Options Underlined)
- 4) INSTALLATION & OPERATING INSTRUCTIONS
- 5) REPLACEMENT PARTS LIST
- 6) DRAWINGS
- 7) PROMOTIONAL DATA
- 8) CUSTOMER DATA

WARRANTY

We guarantee to the original owner that all equipment and accessories manufactured by us to be free from defects in material for a period of one year if properly lubricated and maintained.

Notice of any claims for defects in material must be given to the company, in writing, within the guarantee period, and the company reserves the right to make inspection of the alleged defective equipment or accessories at the customer's plant or at our option request prepaid return of the material to our plant for inspection, before any claims can be allowed and before adjustment, credit, allowance, replacement or return will be authorized. During the guarantee period, if parts are found to be defective by our inspectors, they will be replaced free of charge. No material shall be returned to Sanford Mfg. Corp. without the express written consent of the factory and then only if shipped prepaid.

Any items not manufactured by us are sold only with such warranty as the manufacturer thereof may have furnished, and are not guaranteed by us, in any way.

The warranty begins with the date of delivery.* Unless card is filled in and promptly returned, the year's warranty will be computed from the production date which is indicated by the instrument serial number.

*or six months from date of manufacture at the discretion of Sanford Mfg. Corp.

P.O. Box 318 Roselle, NJ 07203 Tel: 201-245-0505

SANFORD SURFACE GRINDER

INSTALLATION

UNCRATING

The Sanford Surface Grinder has been carefully crated for shipment to insure its accuracy when it reaches your plant. It is important that the removal of the crate be done in such a manner as not to impair the accuracy of the machine or damage the painted surface.

Remove the sides of the crate and unbolt the machine from the platform.

DO NOT LIFT THE MACHINE BY THE LONGITUDINAL TABLE OR CROSS SLIDE.

MOUNTING

Mount the machine on its base, observing the lifting precaution above, with the mounting hardware provided.

PLACEMENT

THE MACHINE SHOULD BE LOCATED TO PROVIDE GOOD LIGHT. If the machine is not equipped with an exhaust system, it should be arranged so that the grinding wheel does not throw abrasive dust on other machinery.

A special foundation is not necessary. Any solid floor strong enough to support the weight of the machine without vibration will be satisfactory.

CLEANING

Rust preventative has been applied to all machined surfaces to protect the grinder during transit. Use solvent to remove this rust preventative. Remove all dust, dirt, and foreign matter. Protect all exposed machined parts from future corrosion by applying a thin coat of light machine oil.

LEVELING

It is your responsibility to properly level the grinder. It is the first essential for accurate work and long service life. Level the machine with the screws provided in the four inside corners of the base.

ELECTRICAL CONNECTIONS

If no specific electrical options have been specified, the machine is wired with an ON-OFF switch and the motor wired in accordance with the instructions on your purchase order. If electrical options and/or special electrics are specified, see the schematic diagram at the rear of this manual for specific connection and switching information. All three phase units should be connected to make sure the spindle is turning in a clockwise direction when facing the front of the machine.

CAUTION:

MACHINES SUPPLIED WITH THE STANDARD ELECTRO-MAGNETIC CHUCK
SHOULD NOT BE USED FOR WET GRINDING!!!!!!!!!!!!!!!!!!!!!!

LUBRICATION AND MAINTENANCE

Your machine has been fully adjusted and tested before leaving the factory. Each machine must pass established accuracy limits before final approval. The grinder will provide long life and trouble free operation if it is kept clean and properly lubricated.

BELT TENSION

CHECK: Belt tension should be such that the belt between pulleys may be compressed to within one inch of touching. This is rather loose, and should be so.

TO ADJUST: Loosen four motor bracket mounting bolts. Slide motor bracket up or down as needed. Tighten motor bracket bolts.

Observation of the above, coupled with good housekeeping and general machine shop practice will add to the efficiency and life expectancy of this precision grinder.

MAINTENANCE AND OILING INSTRUCTIONS FOR SG GRINDERS

The grinder will provide long life and trouble free operation, if it is kept clean and the pulverized particles and dirt from other grinders is not thrown into the feed screws or onto the ways.

Once a week, lift the longitudinal table from the ways exercising extreme care so as not to strike the ways.

Remove any dirt, grit or pulverized material from the ways and cover thoroughly with a film of light oil. (SAE-10W)

While the longitudinal table is removed, the crossfeed screw should be oiled by running the cross slide in and out to expose the screw. Clean the screw and oil with a light oil (SAE-10W) the total length of the screw.

Replace the longitudinal table again being careful not to strike the vee or flat ways.

Raise and lower the spindle housing while oiling the vertical feed screw with a light machine oil after cleaning the screw.

Oil the machine at the points indicated by the various oilers with a light machine oil (SAE-10W) at least once a week or at more frequent intervals if the machine is shut down or not in constant use.

The machine must be kept clean, otherwise the pulverized material from the grinding wheel combined with the oil will form a lapping compound causing excess wear on the lead screws and nuts.

OPERATION INSTRUCTIONS

MOUNTING WHEELS

Remove the front wheel guard by loosening the two bakelite knobs. Remove the threaded adapter collar* by turning clockwise. Then remove the washer and put the wheel in place. Replace the washer and lock nut and draw up using the spanner wrench. It is necessary to prevent rotation of the spindle when tightening up the lock nut. Use the small wrench supplied to hold the adapter. Tighten sufficiently to hold the wheel firmly, but do not tighten excessively.

WHEEL DRESSING

The dressing tool should be secured to the table or magnetic chuck. Place the tool so that the diamond is in the center at the bottom of the wheel. Lower the grinding wheel with the elevation hand-wheel counter clockwise until the diamond on the dressing tool just touches the grinding wheel. Turn the crossfeed handwheel to move the dressing tool across the face of the wheel, lower the grinding wheel about .001" and reverse the crossfeed direction. Repeat this operation until the grinding face of the wheel is true in diameter and parallel to the table.

Unless grinding to the edges of a shoulder, wheels for fine finishing should be rounded off with a hand stone after dressing. This will prevent chipped wheel edges and will keep feed lines at a minimum.

GRINDING

After loading the work on to the chuck or table, start the spindle with the switch. With the vertical handwheel, bring the grinding wheel down until it is just above the work to be ground, then turn the elevating handwheel counter clockwise until the grinding wheel just touches the work. Note the reading on the rim of the elevating handwheel and then lower the grinding wheel the amount it is desired to remove at each cut over the surface.

* MG and LG models only.

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SANFORD SURFACE GRINDERS REBUILDING PRICES AND TERMS

We specialize in rebuilding Sanford Surface Grinders at customer's request to put them in new machine condition so as to provide many more years of useful life. Our base price for this service is as follows:

SG-48.....
MG-612.....
MG-618.....
LG-1016H.....
LG-1016HF.....

Our terms are 1/2 of 1% - 10 days, net 30 days, FOB Roselle for customers who have established credit with us or payment prior to shipment for those who have no credit standing. We require that the machine(s) be shipped to us prepaid and we ship freight collect.

The price for rebuilding the entire machine includes replacement of all worn parts, except as noted below, and all associated labor. The price does not include replacement of missing parts, replacement of spindle shaft, motor, or any casting broken or worn beyond refurbishing, or repair or replacement to hydraulic parts. Parts specifically excluded from the base price are prices at our standard replacement part price. If the customer's order states "cost not to exceed" the base price, we will indicate the additional cost before proceeding with the work and request an amended purchase order.

Machines shipped to us in a dis-assembled condition cannot easily be evaluated prior to work being performed and customer must agree to accept billing for excluded parts as their need is determined.

If in the event the customer's crate is not reusable to return the machinery, Sanford reserves the right to impose a \$60.00 (net) crating charge.

We trust this policy statement will clarify what rebuilding costs are, and how they are determined.

SANFORD MANUFACTURING CORP.

REPLACEMENT PARTS LIST

MODEL SG GRINDER

| <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-----------------|--|
| SG-56V | Vee Belt |
| SG-56F | Flat Belt (specify size) |
| SG-37 | Crossfeed Screw |
| SG-20*** | Crossfeed nut (bronze) |
| SG-20B*** | Crossfeed nut bracket |
| SG-38 | Vertical feed screw (up to s/n; 161-2356) |
| SG-49 | Vertical feed nut (up to s/n; 161-2356) |
| S-627* | Vertical feed screw (SG-2 & SG-48) |
| S-628* | Vertical feed nut (bronze) (SG-2 & SG-48) |
| S-149* | Vertical feed bevel gear (SG-2 & SG-48) |
| SG-51 | Vertical feed pinion gear |
| SG-36 | Longitudinal feed rack |
| SG-50 | Longitudinal feed gear |
| SG-23 | Grinding spindle |
| SG-E-15 | Spindle bearings (s/n up to 151-1500) |
| S-202-PP* | Spindle bearings |
| SG-40 | Vertical feed shaft (up to s/n; 161-2356) |
| S-737* | Vertical feed shaft (SG-2 & SG-48) |
| SG-41 | Longitudinal feed shaft (s/n; AA1-396) |
| SG-41A | Longitudinal feed shaft (s/n; 396 and up) |
| SG-52C | Crossfeed screw bushings |
| SG-52V | Vertical feed shaft bushings |
| SG-52L | Longitudinal feed shaft bushings (s/n; AA1 to 396) |
| SG-53N | Longitudinal feed shaft bushings (s/n; 396 & up) |
| SG-29 | Spindle Pulley (flat) |
| SG-30 | Motor pulley (flat) |
| SG-32 | Spindle pulley (vee) |
| SG-33 | Motor pulley (vee) |

*parts used on machines starting s/n; 161-2356

***SG-20B crossfeed bracket required for machines with
s/n; up to 157-2081. If machine has cast iron bracket,
order part SG-20

REPLACEMENT PARTS LIST
OBSOLETE UNIT
MODEL SG

SANFORD HIGH SPEED BENCH SURFACE GRINDER

Serial no.'s up to 161-2355

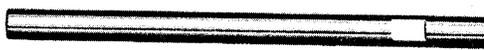
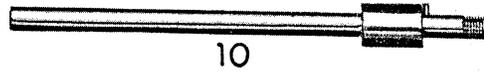
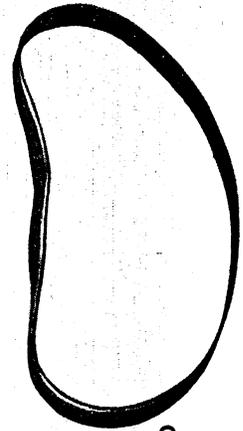
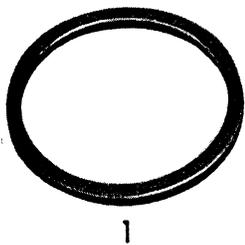
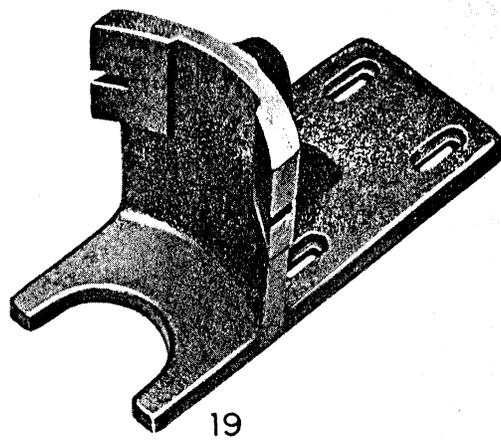
| <u>Part no.</u> | <u>Code</u> | <u>DESCRIPTION</u> |
|-----------------|-------------|--|
| SG-0095 | 1 | Vee belt |
| SG-310 | 2 | Flat belt |
| SG-20 | 3 | Crossfeed nut in bracket |
| SG-34 | 4 | Crossfeed screw |
| SG-36 | 5 | Spindle elevating gear nut |
| SG-35 | 6 | Spindle elevating screw |
| SG-23 | 7 | Grinding spindle |
| SG-E-15* | 8 | Grinding spindle ball bearings (2) |
| SG-37 | 9 | Longitudinal feed shaft machine S/N 397 and up |
| SG-37A | 10 | Longitudinal feed shaft (machine S/N AA1 to 396) |
| SG-B-88 | 11 | Needle bearings to fit part #37 (set 2) |
| SG-BA-4 | 12 | Bronze bushings to fit part #37A (set 2) |
| SG-38 | 13 | Vertical feed shaft |
| SG-AC-2 | 14 | Bronze bushings to fit part #38 (set 2) |
| SG-E-75 | 15 | Bronze bushings to fit part #34 (set 2) |
| SG-L149P | 16 | Vertical shaft bevel gear |
| SG-NB16B | 17 | Longitudinal feed gear |
| SG-39 | 18 | Rack |
| S-627 | 19 | Motor bracket |
| SG-32 | 20 | Motor pulley (flat belt) |
| SG-32V | 21 | Motor pulley (vee belt) |
| SG-33 | 22 | Spindle pulley (flat belt) |
| SG-33A | 23 | Spindle pulley (vee belt) |

* On all machines previous to serial # 151-1500, a new spindle must be installed due to the discontinuance of the manufacture of E-14 spindle bearings.

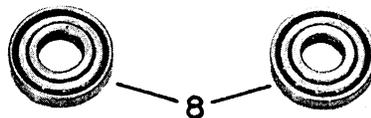
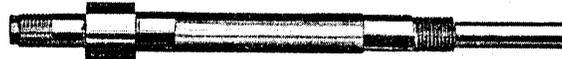
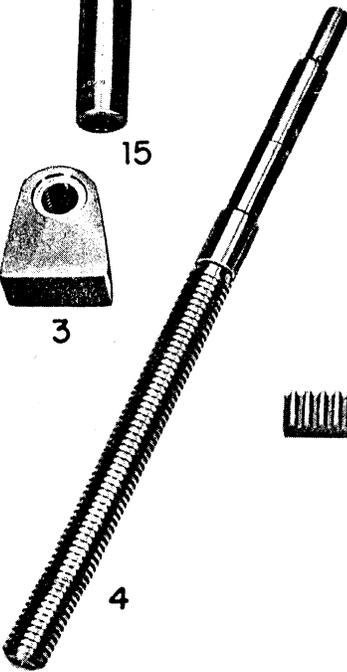
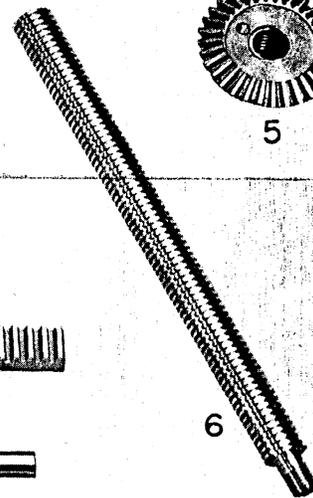
ALWAYS SPECIFY SERIAL NUMBER OF MACHINE ON ORDERING REPLACEMENTS.

WE MAKE A SPECIALTY OF RECONDITIONING OUR EQUIPMENT.

All prices are F.O.B. factory, and are subject to change without notice. We have a minimum billing of \$25.00.



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SANFORD SERVICE NOTE #74-2

The SG machine has used a number of different drive belts over the years and merely ordering a "SG Drive Belt" usually results in delay, error, or both.

The standard belt now in use is our part number SG-56V, and is a vee belt.

We have supplied various flat belts over the years, the most popular of which are:

| | | |
|----------|-----------|-----------|
| SG-56-F | Flat belt | 1/2 x 17 |
| SG-56-FA | Flat belt | 1/2 x 10 |
| SG-56-FB | Flat belt | 9/16 x 13 |

In order for us to provide the proper belt for your machine, we would appreciate you giving us the part number and description so that the proper item can be supplied as quickly as possible.

Also, please be aware of our minimum billing of \$25.00 per order which we are forced to impose due to the high cost of processing part orders. If you could combine belt order with other needs, it would be to your benefit.

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SANFORD SERVICE NOTE #75-2

SUBJECT: REPLACING LEAD SCREWS AND NUTS

When ordering replacement Crossfeed or Elevating Nuts (which appear from the outside to be bronze bushings) we recommend replacement of the associated Lead Screw. Experience has shown that putting a new nut on a worn screw is offer a waste of time and money.

NOTES FOR SG SPARE PARTS LIST

- 1) When replacing spindle motor on units with serial no's up to 161-2355, motor bracket no. SG-10 must be replaced with adapter motor bracket no. SG-10A.
- 2) The following items are required in place of the current items if the serial number is within the numbering sequence indicated below:

| <u>SERIAL NUMBER</u> | <u>PART NUMBER</u> | <u>DESCRIPTION</u> |
|---------------------------|-------------------------|--|
| UP TO #396 | SG-41 SG-52L | LONGITUDINAL FEED SHAFT LONGITUDINAL FEED SHAFT BUSHINGS |
| UP TO 157- 2081 | SG-20B | CROSSFEED NUT BRACKET (REQUIRED CROSSFEED NUT SG-20n IS REPLACED) |
| UP TO 161- 2355 | SG-38 SG-49 SG-40 | VERTICAL FEED SCREW VERTICAL FEED GEAR NUT VERTICAL FEED SHAFT |
| 151-1501 thru 161-2355 | SG-E15 | SPINDLE BEARINGS (2) |
| UP TO 151-1500 | | (SEE NOTE 3 BELOW) SPINDLE REPAIR MUST BE DONE AT FACTORY |

**3) When spindle and/or spindle bearing need replacement, it is usually more economical to ship spindle housing back to the factory. We will quote labor and materials promptly and reship repaired housing usually within two (2) working days of price approval.

4) Machines which are in need of major repair can usually be factory rebuilt at approximately 1/3 the current replacement cost, turn-a-round time is usually 4-6 weeks. We invite your request for quotation on our factory refurbishing program.

cost-** Spindle repair is labor plus parts

GRINDING WHEELS

| | | | |
|-------------------|-------------|--------------|-----------------|
| 4" x 3/8" x 1/2"; | SMC 104-46 | 46(Med.) | General Purpose |
| | SMC 104-54 | 54(Med.) | Hard Materials |
| | SMC 114-60 | 60(Med/Fine) | Hard Materials |
| | SMC 114-80 | 80(Med/Fine) | Form Grinding |
| | SMC 114-100 | 100(Fine) | Form Grinding |

| | | | |
|---------------------|-------------|-----------|-----------------|
| 7" x 1/2" x 1-1/4"; | SMC 107-46 | 46(Med.) | General Purpose |
| | SMC 107-54 | 54(Med.) | Hard Materials |
| | SMC 117-100 | 100(Fine) | Form Grinding |

| | | | |
|---------------|-------------|----------|-----------------|
| 10" x 1" x 3" | SMC 1010-54 | 54(Med.) | General Purpose |
|---------------|-------------|----------|-----------------|

| | | | |
|---------------|-------------|----------|-----------------|
| 12" x 1" x 3" | SMC 1012-54 | 54(Med.) | General Purpose |
|---------------|-------------|----------|-----------------|

THIS SELECTION OF GRINDING WHEELS SHOULD COVER MOST OF YOUR GRINDING REQUIREMENTS. ALL OF THE SIZES LISTED ARE AVAILABLE FROM STOCK AND CAN BE ORDERED BY THE PART NUMBER.

SPECIAL WHEELS OR QUANTITY PURCHASES WILL BE QUOTED UPON REQUEST.

MISCELLANEOUS

- 1) ALWAYS SPECIFY MODEL AND SERIAL NUMBER OF MACHINE WHEN ORDERING REPLACEMENT PARTS.
- 2) ALL SHIPMENTS ARE MADE F.O.B. OUR FACTORY AT ROSELLE, NEW JERSEY
- 3) WE MAKE A SPECIALTY OF RECONDITIONING (REBUILDING) OUR EQUIPMENT, ASK FOR A QUOTATION.
- 4) WE RESERVE THE RIGHT TO REQUIRE PRE-PAYMENT, OR TO SHIP C.O.D. WHEN CREDIT HAS NOT BEEN ESTABLISHED.
- 5) MINIMUM ORDER IS \$25.00.
- 6) THERE IS A 20% RESTOCKING CHARGE ON ALL SPARE OR REPLACEMENT PARTS RETURNED BECAUSE THEY WERE ORDERED ERRONEOUSLY.
- 7) PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

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SANFORD SERVICE NOTE #74-3A

SUBJECT: Spindle Repair

On both SG and MG spindles, the spindle assembly is built into the spindle housing. In most cases where the user does not have the facilities and/or the specific know how to do a spindle rebuilding job, the most economical and fastest approach to the repair problem is to send the housing back to the factory complete and not dis-assembled. Normal turn-around time is 48 hours and the unit will be re-shipped by the same method sent to the factory unless otherwise specified or requested.

This service note is prompted by the many cases where customers have purchased a new spindle (unnecessarily) and ruined both the new spindle and the associated bearings in the process of attempting a repair. Our experience has shown that 90% of spindle repairs can be accomplished by replacing the bearings and using two hours of factory labor provided the housing is returned to us.

On SG machines with serial numbers between 151-1500 and 161-2355 Type E-15 bearings are available. Below serial number 151-1500 bearings are no longer available. In either case, factory rebuilding of spindle housing is recommended so that current replacement parts can be used for maintenance.

It is requested that all incoming shipments be prepaid as our employees are instructed to refuse all incoming collect shipments. Failure to follow this instruction may result in double freight charge.

All outgoing shipments are F.O.B. Roselle, NJ.

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EFFECTIVE 1-1-88 MODEL SG-48

RE: U.L. APPROVAL

In order to comply with Underwriter's Laboratory requirements, the following design change will be made in all Model SG-48 Surface Grinders with Electro-Magnetic Chucks.

P 202 B TRW Cinch Jones Plug will be protruding from the SG-15 Electro Magnetic Chuck and it will mate with S 202 CCT TRW Cinch Jones Socket which will be at one end of the Chuck Cable and cord.
P 202 CCT TRW Cinch Jones Plug will be at the other end of the Chuck Cable and Cord mating with the S 202 B TRW Cinch Jones Socket which remains in the base of the SG-48 Surface Grinder and is wired to the rectifier unit.

In other words,
S302AB formerly the Plug in base is replaced by S-202B
S202B formerly the socket in the chuck is replaced by P-202B
P202CCT formerly the plug in the chuck end of the cable is replaced by
S202CCT
P302CCT formerly the plug in the base end of cable changes to
P202 CCT.

THESE CHANGES SHOULD BE EFFECTIVE WITH SERIAL NUMBERS 3303 and up.

It is recommended that older customers having prior model numbers make this change.

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**OUR NEW
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SANFORD SERVICE NOTE 61588

CAUTION - "HOT" MOTORS

Using your hand to test the running temperature of a motor can be a very painful experience:

| | |
|---|---------|
| NORMAL BODY TEMPERATURE | 98.6 F |
| THRESHOLD OF PAIN CAUSED BY HEAT | 120. F |
| AVERAGE TEMPERATURE OF HOT TAP WATER | 140. F |
| AVERAGE TEMPERATURE OF HOT COFFEE | 180. F |
| NORMAL OPERATING TEMPERATURE OF A FULLY LOADED ELECTRIC MOTOR, OPEN TYPE, 70 AMBIENT TEMPERA- TURE. | 174.0 F |

YOU CANNOT WASH YOUR HANDS IN 140 F WATER!

YOU CANNOT STIR A FRESH CUP OF COFFEE WITH YOUR FINGER!

YOU CANNOT PLACE YOUR HAND ON A MOTOR THAT IS OPERATING PROPERLY WITHOUT BURNING YOUR HAND.

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SANFORD SERVICE NOTE #9490

Subject: Offshore Bearings

Effective September 4, 1990, many Sanford Surface Grinders may be manufactured with offshore bearings.

The same offshore bearings may be supplied as replacement parts. The reason for this is that the remaining American ball bearing manufacturers refuse to produce the ball bearings that they formerly supplied to Sanford. In fact, they attempted to offer us an inferior product; which would only result in our having to compromise our quality. They also offered to supply us with an ultra high precision bearing far greater and costlier than required for our application. This was not cost efficient and would give no longer life to our customers.

We have decided to contract with the second largest ball bearing manufacturer in the world to fabricate ball bearings for our equipment. Strangely enough, we have learned that they have been producing for our former American vendor who would turn around and sell us what they produced for him at a fair mark-up. The manufacturer stands behind these ball bearings whether manufactured offshore or in America.