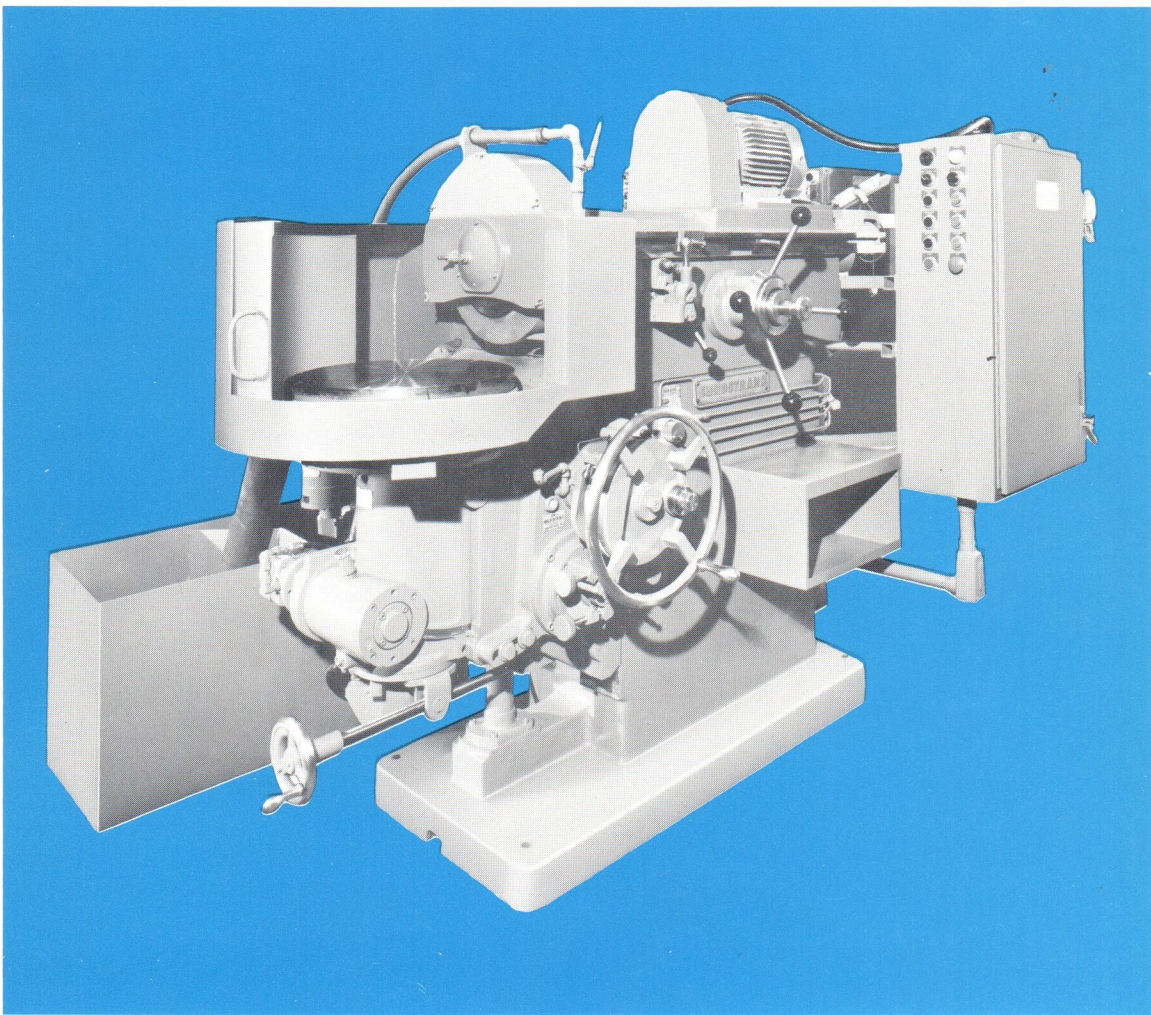


SUNDSTRAND

Model D

rotary surface grinders

specification data



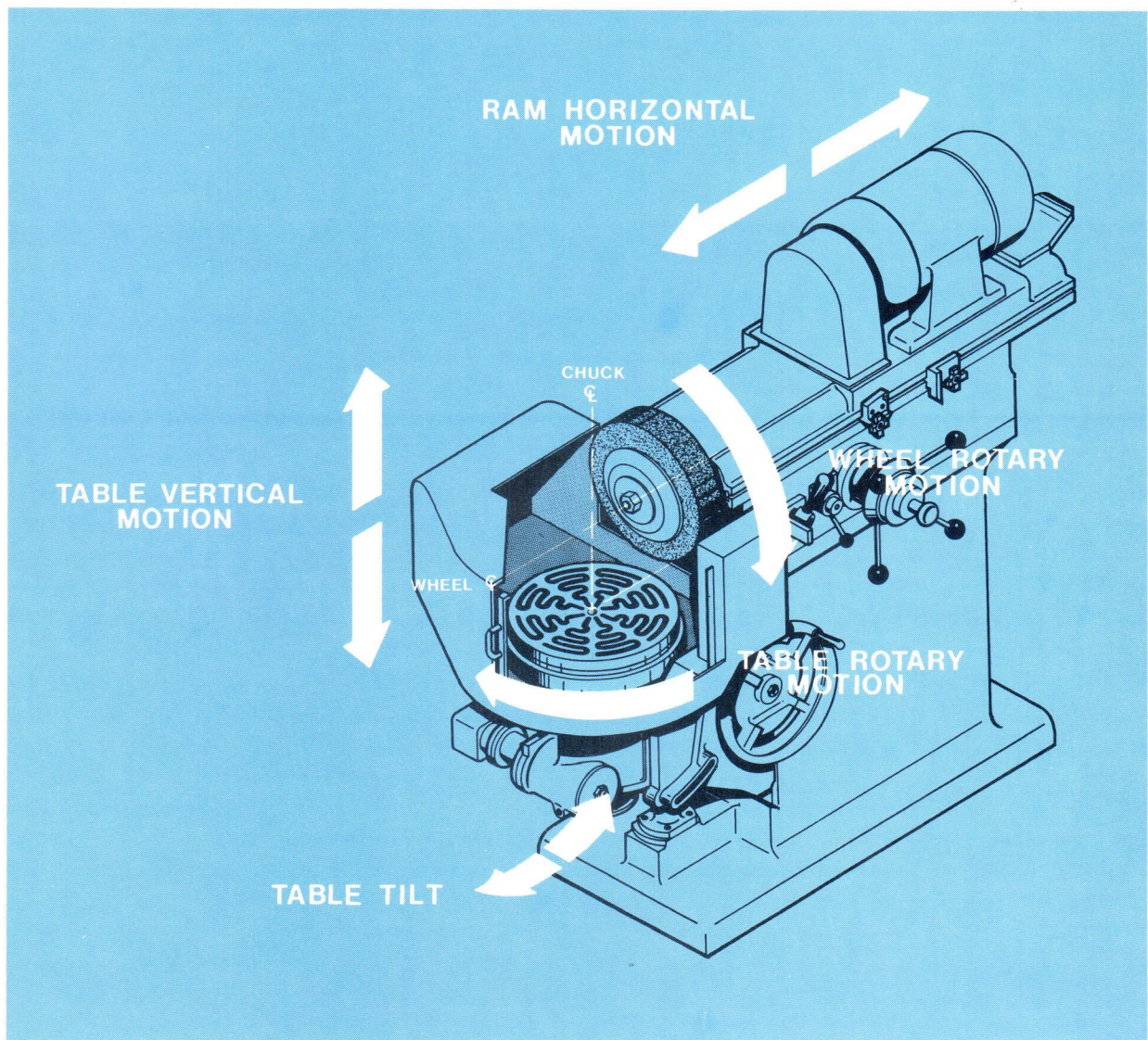
Sundstrand Machine Tool specifications 1220-S and 1221-S are effective April 1, 1972, and are subject to change without notice. For exact current specifications on any machine model call or write, Sundstrand Machine Tool, division of Sundstrand Corporation, Belvidere, Illinois 61008. Phone A.C. 815/547-5321.

MODEL D ROTARY SURFACE GRINDER

The Model D is a horizontal spindle rotary table surface grinder, designed around the concept in which the grinding wheel spindle centerline intersects with the workpiece magnetic chuck centerline with both centerlines defining the vertical plane containing the line of grinding contact.

The basic machine motions indicated are set up around the above concept to accomplish grinding the complete surface of the workpiece to a required size and geometry. Straight convex and concave surfaces may be ground by tilting the table of chuck to the required angle.

Figure 1 - Machine Concept and Motions



description of machine and motions

The exploded view of the Model D Grinder (Figure 2) shows the various basic machine units.

The lower base casting is well ribbed, close-grained, stress relieved, cast iron with four leveling and hold-down points. It serves as the stable support for building up the necessary machine motions.

The upper base is meehanite cast iron with flame hardened and ground vee and flat ways. The upper base contains the manual ram capstan and rack pinion gear.

The wheel spindle and ram assembly is made with vee and flat ways scraped and matched to those in the upper base. The side of the ram casting is machined with a T-slot that contains the two ram reversal dogs. The grinding wheel spindle is a cartridge precision anti-friction bearing spindle designed for the use of diamond wheels as well as regular abrasive wheels. The grinding wheel collet is mounted on the tapered spindle nose. An identical tapered arbor is available for balancing the wheel and collet assembly.

The spindle speed is 1400 RPM. The ram is moved by hydraulic cylinders and the length of the ram stroke is adjustable with T-slot dogs. Once started, the ram will continue to reciprocate until manually directed to the retract stopped position.

The speed of the ram stroke is variable

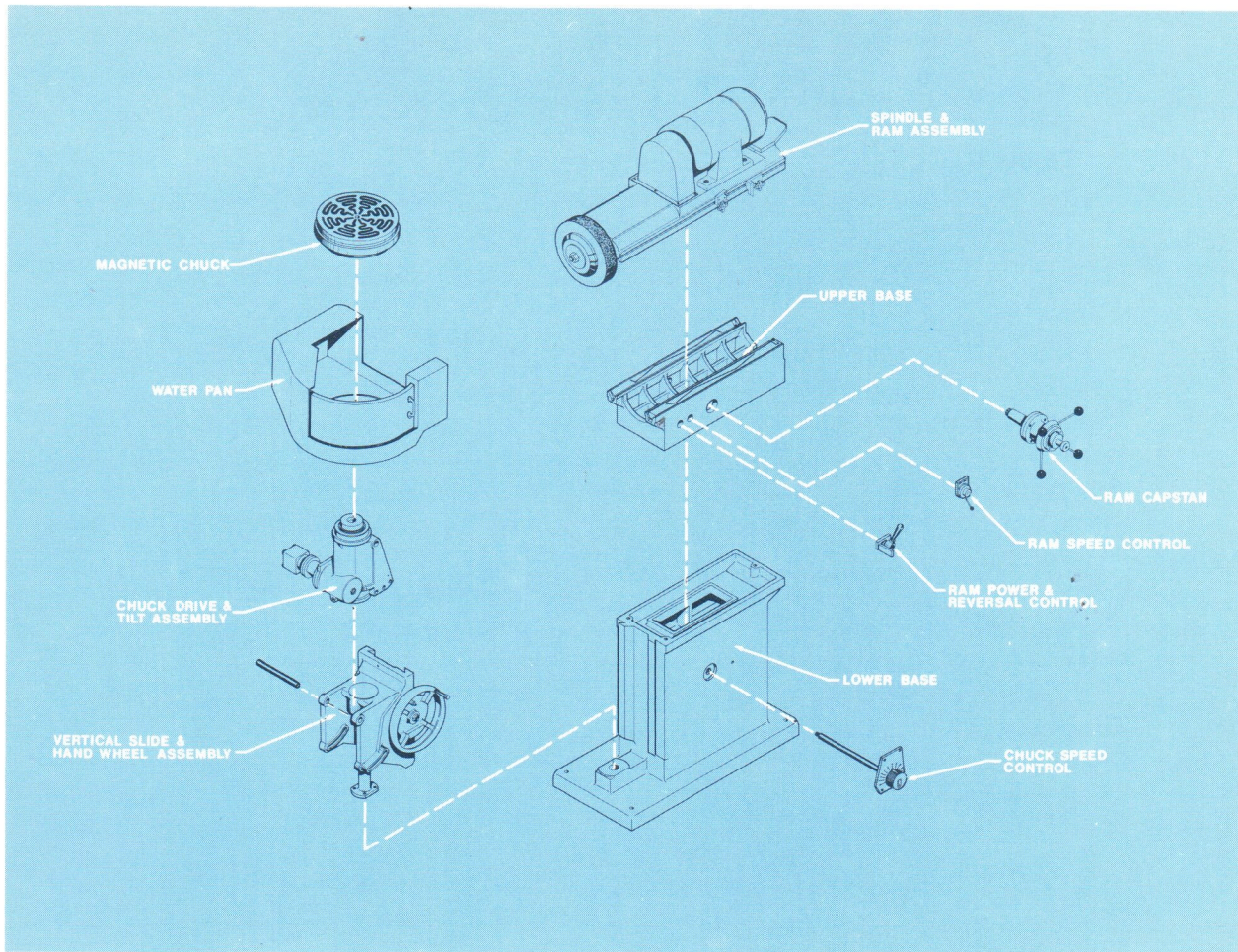
between a low and high limit within the range 0-10 FPM.

The underside of the ram is fitted with a rack which meshes with the rack pinion gear mounted on the ram capstan shaft. Pulling out the ram capstan clutch knob engages the pinion gear with the rack and shuts off the ram hydraulic cylinder oil supply. Use of the ram capstan allows manual control of ram position.

The vertical slide and handwheel assembly is supported by the vertical feed screw and slides on the dovetail ways of the lower base. The vertical movement may be obtained through the handwheel, manually or by using a ratchet wheel and pawl powered by an oscillating hydraulic motor. Table vertical motion is the grinding feed motion and occurs in an adjustable increment at the ram reversals. Once feed is started, it will occur automatically until the adjustable end of feed stop is reached, or manual feeding may be used.

A vertical slide supports the rotary chuck drive and tilt assembly, the water pan, and the magnetic chuck. The rotary chuck is driven by a hydraulic motor through a worm and worm gear. Work table rotary motion is variable between a low and high limit within the range 60 - 250 RPM. Any motion of chuck is locked out during the diamond dressing of the grinding wheel by an electric brake on the chuck drive motor shaft.

Figure 2 - Machine Schematic



operator safety list

1. The grinding wheel spindle runs at 1400 RPM and with a 16 inch diameter Type I grinding wheel is 6000 SFPM peripheral wheel velocity. This is well within the maximum safe speed of 6500 SFPM ASA safety code. (Operator should ring the grinding wheel before mounting).
2. The grinding wheel flanges and wheel guards are designed to comply with the ASA safety code.
3. Motor V-belt guards are covered on both sides.
4. The operator is protected against reverse high speed spinning of the chuck and workpiece by the grinding wheel through a pressure switch in the feed line to the chuck motor. If the hydraulic hose would break or be severed accidentally, the pressure switch will immediately shut off the complete machine, except for the magnetic chuck.
5. The manual ram capstan is mechanically interlocked with the ram hydraulic control so that it is not possible to obtain both manual and hydraulic power to the ram at the same time.
6. Sound level readings taken in accordance with the recommended NMTBA Noise Measurement Techniques (Publication HL3M-6/70) at three (3) feet distance from major surfaces, with the machine in the operating condition and the spindle running at top speed under no load (part not being machined), are well within the requirements of the Walsh-Healy Act.

specification data

MODEL D-12

Capacity

Magnetic Chuck, nominal diameter	.12''
Magnetic Chuck, actual face diameter	.13''
Magnetic Chuck, center pilot hole diameter	.750''
Maximum diameter swing inside water pan	.25''
Maximum work height under full diameter wheel	9''
Standard Grinding Wheel size	16'' diameter, 1-1/2'' thick, 8'' hole
Wheel Collet flange diameter	10-1/2''
Maximum stroke of Wheelhead	.13''
Tilt of Work Table - Convex	.20°
Tilt of Work Table - Concave	.10°
Chuck spindle speeds infinitely variable	60 - 250 RPM
Wheel spindle RPM	1400
Wheelhead traverse	.0 - 10 RPM FPM

General Data

Hydraulic Reservoir	45 gallons
Floor Space	87'' x 89''
Estimated Net Weight	.6000 pounds

SPECIFICATION 1220-S

specification data

MODEL D-16

Capacity

Magnetic Chuck, nominal diameter	16"
Magnetic Chuck, actual face diameter	18"
Magnetic Chuck, center pilot hole diameter750"
Maximum diameter swing inside water pan	25"
Maximum work height under full diameter wheel	9"
Standard Grinding Wheel size	16" diameter 1-1/2" thick, 8" hole
Wheel Collet flange diameter	10-1/2"
Maximum stroke of Wheelhead	13"
Tilt of Work Table - Convex	20°
Tilt of Work Table - Concave	10°
Chuck spindle speeds infinitely variable	60-250 RPM
Wheel spindle RPM	1400
Wheelhead traverse	0-10 FPM

General Data

Hydraulic Reservoir	45 gallon
Floor Space	87" x 89"
Estimated Net Weight	6000 pounds

SPECIFICATION 1221-S

standard equipment and features

1. Manual capstan and hydraulically-operated wheelhead traverse (safety interlock, no hydraulic power possible if in manual mode).
2. Automatic hydraulic work table vertical feed with compensating handwheel.
3. Variable speed hydraulically-driven workpiece chuck with dressing brake.
4. Magnetic chuck radial pattern.
5. 16" x 1-1/2" x 8" general-purpose grinding wheel and wheelholder.
6. Diamond holder for table mounting, less diamond nib.
7. Machine arranged for coolant system.
8. Paint NMTBA #7B Medium Gray.
9. Compact floor plan per Drawing # 64020392.

Lubrication

10. Wheelhead and chuck slide ways - Bijur solenoid operated by electric timer - 6 pint reservoir, low level warning.
11. Grinding wheel spindle - anti-friction bearing grease packed and sealed.
12. Rotary chuck spindle - upper and lower bearings packed for life. Worm gear immersed in 2-quart oil reservoir.
13. Knee elevating unit - oil - 1-quart reservoir.

Hydraulic

14. Separate 45-gallon hydraulic reservoir and hydraulic unit positioned on floor next to grinder base.
15. Pump fitted with full flow strainer (Tel-Tale) and with by-pass low Micron system cartridge filter.
16. Hydraulic drive pump, 10 GPM, and chuck drive pump, 10 GPM.

Electrical

17. Set of electrical controls to JIC-EGP-1-1967 Standards.
18. 10HP totally enclosed precision balanced wheelhead motor, 1800 RPM.
19. Magnetic chuck rectifier, 110 volt D.C., with automatic demagnetization with remote control (Neutrofier EML-3FD).

Engineering Support Data

20. One copy of a certified floor plan mailed to customer and certified by our shop, usually within six weeks of receipt of order.
21. On machines where we are providing a fixture, two fixture approval drawings will be mailed to customer, one of which must be received back at Sundstrand within 14 days of our original mailing date in order to avoid delivery date delay.
22. On machines where electrical or hydraulic approval drawings have been requested, two copies of the approval drawings will be mailed to the customer, one of which must be received back at Sundstrand within 14 days of our original mailing date in order to avoid delivery delay.
23. At the time of machine shipment, three copies of the installation, operation, and maintenance manuals will be mailed to customer. This mailing will also include one reproducible drawing each of the electrical and hydraulic drawings. All drawings provided as standard will be on Sundstrand paper.

A fourth copy of the installation, operation, and maintenance manual, along with drawings and special instructions, will be attached to the machine in a sealed waterproof packet and marked "Property of Sundstrand Service Engineer - Do not remove from machine or warranty will be voided". After installation and acceptance, the extra manual may be given to the customer.

Machine Inspection and Release

24. Every Sundstrand Grinder must pass a rigid inspection of machine motion accuracy and operational performance before customers are notified the machine is ready for their inspection and release for shipment. The customer will receive a copy of the Sundstrand Inspection Report.
25. On machines where production rate and/or part tolerance guarantees have been made, the customer is invited to witness the test runoff on his parts before he releases the machine for shipment, or he may release the machine on the basis of a satisfactory Sundstrand test runoff and report which he will receive.

Generally, hourly production rate and/or tolerance tests take no more than one day, and the customer could expect that his visit to Sundstrand could be completed within this time.

Customer requests for special test runoff procedures that may require more time here will be handled on an individual basis, whether the tests occur at Sundstrand or at the customer location, or both.

Where a Sundstrand test runoff on customer parts is requested, our letter of order acceptance to the customer will request the number of parts required, a certified part blueprint, and the latest receiving date for the parts, and advice if additional costs are involved. Sundstrand may make a final part shipment follow-up with the customer 60 days before expected test runoff date.

Machine Installation and Startup Service

26. A Sundstrand service engineer will be provided for installation supervision and operator instruction. With the assist of the certified floor plan and installation manual, it is the responsibility of the customer to prepare the foundation, set the machine in place, and run the various services required to the machine, at which point Sundstrand is informed and arranges for the service engineer. Depending on machine complexity and other special circumstances, the initial machine startup and adjustment and operator instruction usually takes form two to five days. Special customer requirements beyond this will be handled on an individual basis.

optional equipment

ITEM 2 - Motors and Controls for 230 volt, 60 Hertz, 3 phase.

ITEM 3 - Fine feed adjustment of ram for shoulder grinding, (Positions for horizontal travel of ram to .0001".)

NOTE: When this option is supplied, the manual capstan arrangement of positioning the ram is not available.

ITEM 4 - Reversible direction drive to chuck and wheel spindles.

ITEM 5 - Hydraulic wheel guard mounted dressing attachment.

ITEM 6 - Trabon lubricator with positive metered lubrication to each lubricating line, 6-quart reservoir, air-actuated pump, single central warning system to protect against failure with control through electrical timer (Trabon Pump - ALS).

ITEM 7 - Sundstrand Magnetic Coolant Separator, Model 22, 50 g.p.m. capacity.

ITEM 8 - Sundstrand HELICONE Automatic Coolant Filter, Model C-40-90, 40 g.p.m. and 90-gallon tank; with dragout conveyor.

ITEM 9 - Motor Driven Coolant Pump and Piping, including 50-gallon tank and 1/4 HP integral pump and motor.

accessories

ITEM 10 - Wheel Balancing Arbor

ITEM 11 - Wheel Puller

ITEM 12 - Extra Wheel Holder Assembly

ITEM 13 - Diamond Nib - 1 karat

ITEM 14 - Balancing Stand # BT-1, bench style

ITEM 15 - Balancing Stand # BT-2, floor style

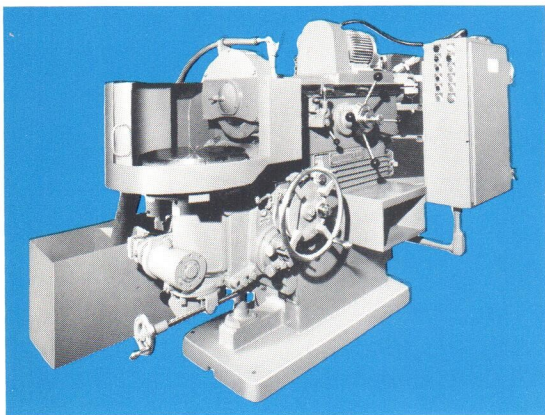
ITEM 16 - Balancing Stand # BT - 10, bench style, super-sensitive

Your Sundstrand Distributor can help you choose the right machine and the right method to answer your rotary surface grinding needs. Ask him to arrange for an "Engineered Production" study of your specific grinding application.

SUNDSTRAND rotary surface grinders

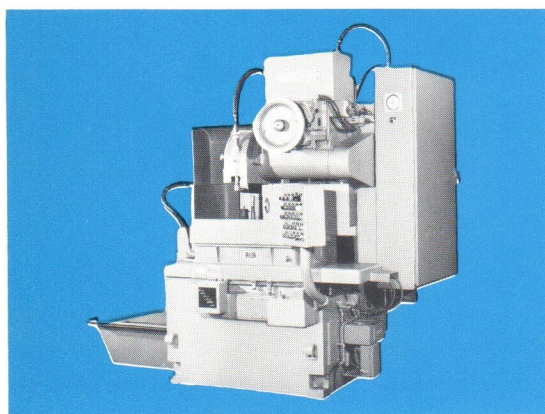
Sundstrand offers the most complete line of rotary surface grinding equipment available. Choose ram or saddle type, in the size and horsepower range to best suit your application needs. Any model you select will give you design and operating features that add up to accuracy, versatility, and increased productivity.

D



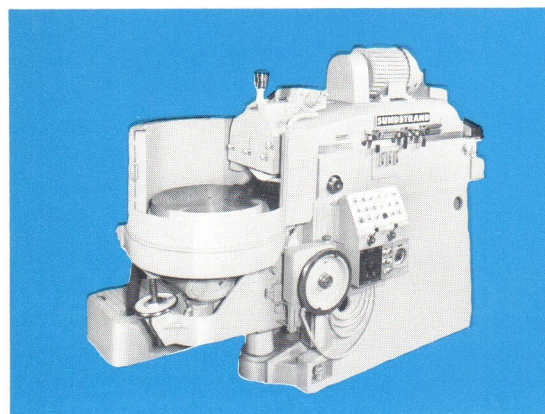
A precision ram-type machine, the Model D grinder, is versatile enough for both toolroom and production operations. Available in 12" and 16" models, the chuck is adjustable to allow grinding of flat and beveled surfaces.

E



The Model E grinder is a rugged saddle-type machine built to deliver true abrasive machining capability. High horsepower and many automatic features make the Model E the most productive machine of its type.

H



Available with table sizes from 16" to 40", the Model H grinder can be equipped with automatic cycle for high production runs. The H grinder combines fast stock removal with ultra-accurate finishing cuts for superior finish, flatness, and parallelism.

Sundstrand Machine Tool

BELVIDERE, ILLINOIS 61008
division of Sundstrand Corporation

