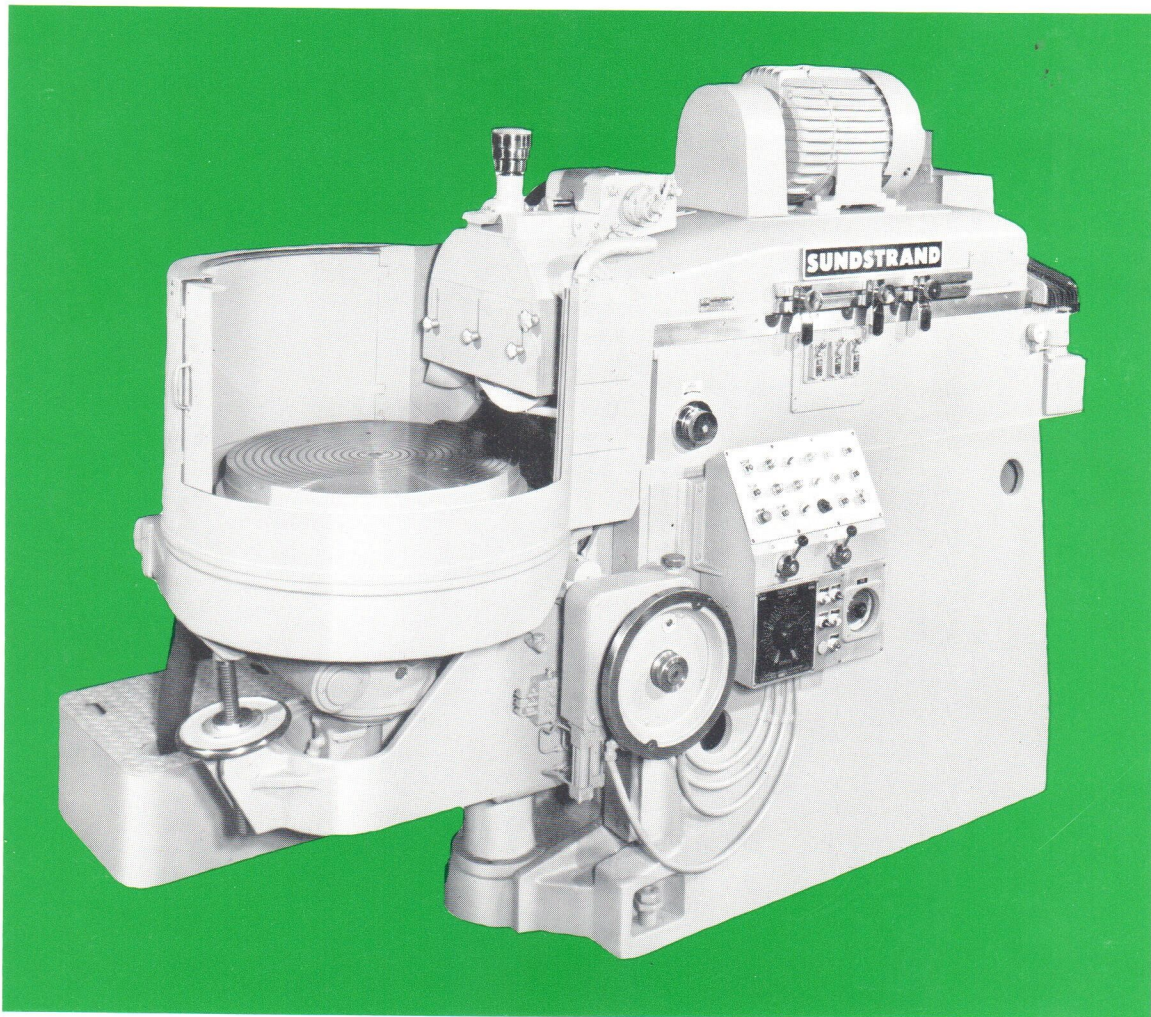


SUNDSTRAND

Model H

rotary surface grinders

specification data



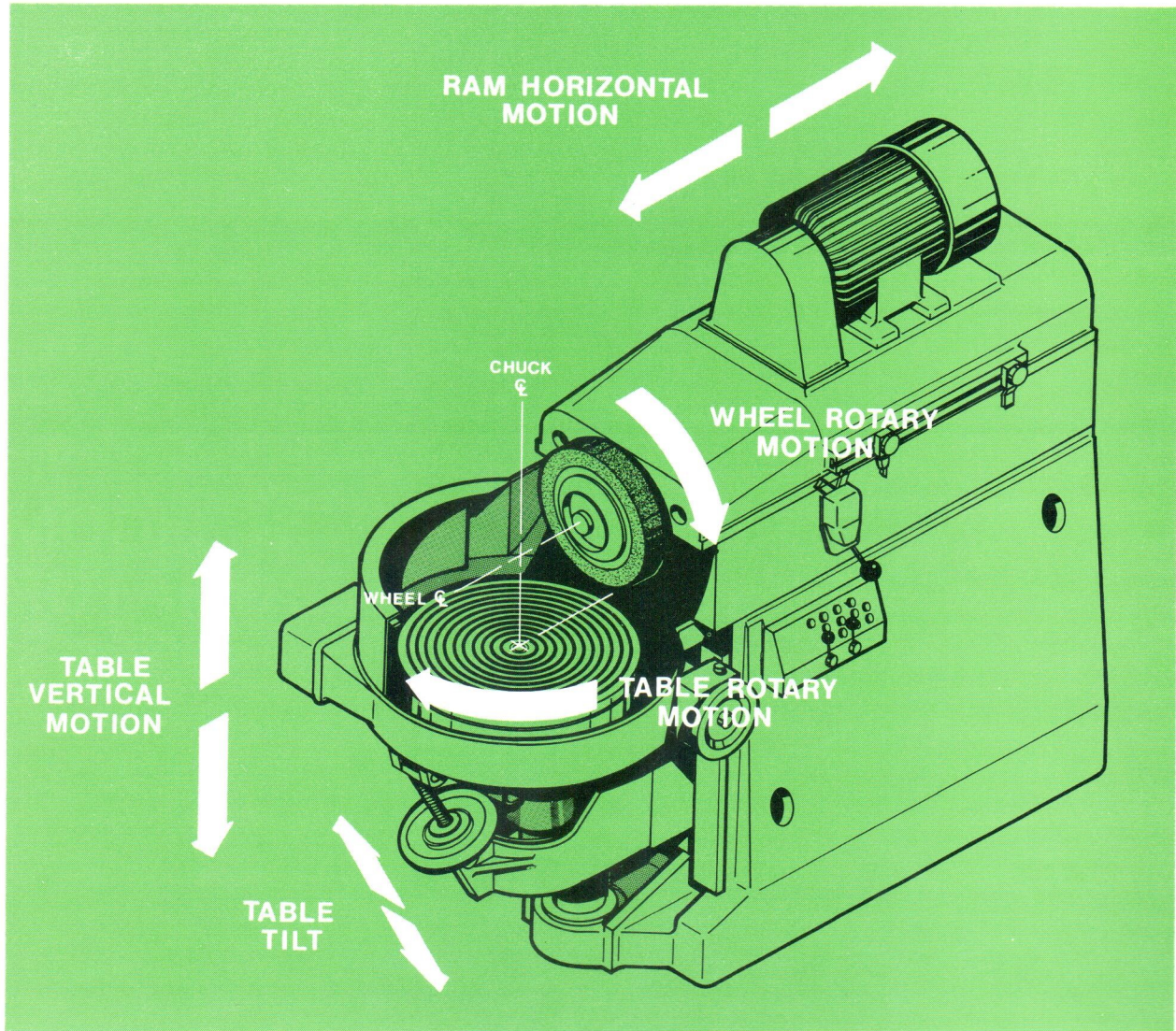
Sundstrand Machine Tool specifications 1250-1, 1250-2, 1250-3, 1250-4, and 1250-5 are effective April 1, 1972, and are subject to change without notice. For exact current specifications on any machine model, call or write, Sundstrand Machine Tool, division of Sundstrand Corporation, Belvidere, Illinois 61008. Phone A.C. 815/547-5321.

MODEL H ROTARY SURFACE GRINDER

The Model H 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 work piece to a required size and geometry. Straight convex and concave surfaces may be ground by tilting the table of chuck to the required angle. (Except no tilting Model H-40)

Figure 1 - Machine Concept and Motions



description of machine and motions

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

The lower base casting is well-ribbed, close-grained, stress-relieved cast iron with three 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 scraped and matched to those in the upper base. The full length of ram ways is always supported by the base ways. Double stage wipers protect the ways in front with wipers and accordian way covers in the rear. 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 antifriction 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.

For grinding a flat surface adjacent to a vertical protruding hub or shoulder, an adjustable position stop is provided as a safety stop to prevent the grinding wheel from hitting the hub in case of failure or slippage of the reversal dogs or mechanism.

The speed of the ram stroke is variable between a low and high limit within the range 0 - 10 FPM.

The vertical slide and handwheel assembly is supported by the vertical feed screw and slides on wrap-around ways with central guideway. The vertical movement may be obtained through the handwheel, manually or by automatic hydraulic feed. 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.

The hydraulic ram traverses the periphery of the grinding wheel over the workpiece surface with the ram reversals controlled by the ram T-slot dogs actuating a hydraulic reversing valve. The proper grinding ram speed is obtained by manual adjustment of a hydraulic flow control valve.

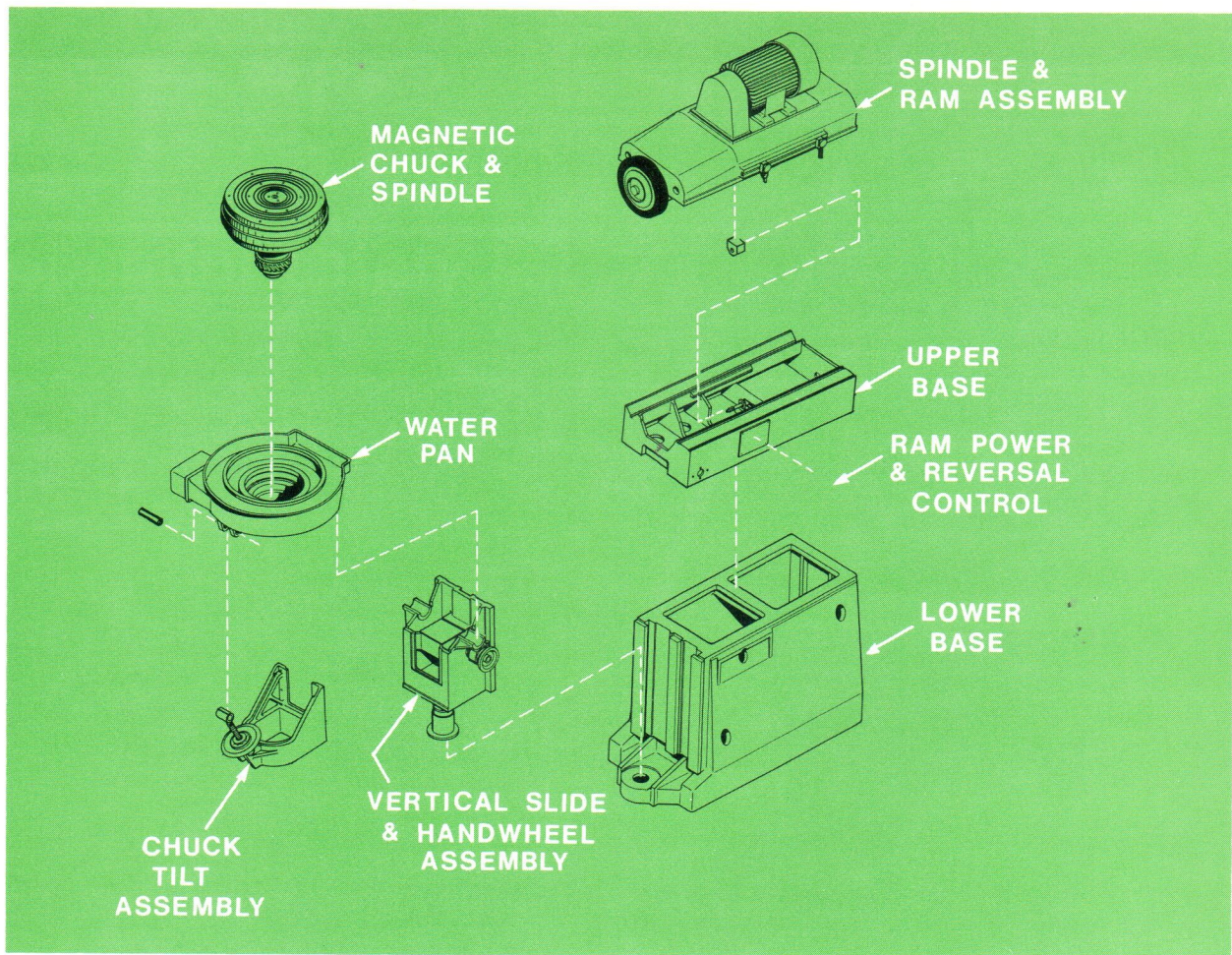
The workpiece is held by the fixture or the magnetic chuck worktable which rotates the part under the grinding wheel by the hydraulic motor worm gear drive with speed manually adjustable by a flow control valve.

The whole worktable unit is held on a vertical slide unit that moves vertically to accomplish grinding feed. The feed motion is actuated by a hydraulic cylinder ratchet-pawl mechanism operating a feed screw and is manually adjustable with a knob for different amounts of feed from .0001" to .0015". In grinding, the feed handwheel is manually declutched by handknob and backed off from zero end of auto feed point by the amount of feed desired, the ram is started and auto feed started. The feeding at ram reversals continues until the end of auto feed stop on the handwheel is reached. The ram continues to traverse the grinding wheel over the workpiece for the desired number of sparkout passes, at which point the forward ram dog is manually lifted, letting the dog pass over the ram reversal valve, allowing the ram to return to the fully-retracted position.

The auto feeding at ram reversals is selectable between feeding at each reversal, or every other reversal. A timer-controlled auto feeding is available for use in plunge grinding.

The grinding wheel is trued and dressed, using the wheel guard mounted hydraulically-operated diamond dresser or a diamond dresser block held on the magnetic chuck.

The 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 shown in specs on Page 6. Reverse motion of chuck is prevented by self-locking worm.

operator safety list

1. The grinding wheel spindle runs at 1400 RPM, and with a 16-inch diameter Type 1 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 by a self-locking worm drive.
5. Sound level readings taken in accordance with the recommended NMTBA Noise Measurement Techniques (Publications 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.
6. In order to provide operator safety for grinding flat surfaces next to a protruding hub or shoulder, an adjustable positive stop for ram motion is provided.

specification data

SPECIFICATION 1250-1

MODEL H-16

Capacity

Rotary Table diameter	17"
Maximum work height with new wheel	10"
Wheel Collet flange diameter	10-1/2"
Maximum diameter swing in water pan	26"
Standard Wheel size	16" x 2" x 8"
Angular tilt - Convex	10°
Angular tilt - Concave	10°
Wheelhead stroke - maximum	13"
Vertical travel of knee - maximum	12"

Speeds and Feeds

Wheelhead spindle RPM	1400
Wheel traverse - infinitely adjustable	0 - 10 FPM
Table speed - continuously variable	60 - 250 RPM
One rev. of feed handwheel . . . . .	.020"
Finest div. of feed handwheel . . . . .	.0001"
Power feed - adjustable . . . . .	.0001" x .0015"

General Data

Hydraulic Reservoir	45 gallon
Chuck Pilot diameter	1"
Floor Space - total	63" x 116"
Net Weight - approximate	11,200 pounds

specification data

SPECIFICATION 1250-2

MODEL H-20

Capacity

Rotary Table diameter . . . . .	.21''
Maximum work height with new wheel . . . . .	.10''
Wheel Collet flange diameter	10-1/2''
Maximum diameter swing in water pan . . . . .	.26''
Standard Wheel size	16'' x 2'' x 8''
Angular tilt - Convex . . . . .	.10 ^o
Angular tilt - Concave . . . . .	.10 ^o
Wheelhead stroke - maximum . . . . .	.13''
Vertical travel of knee - maximum . . . . .	.12''

Speeds and Feeds

Wheelhead spindle RPM	1400
Wheel traverse - infinitely adjustable . . . . .	.0 - 10 FPM
Table speed - continuously variable	45 - 190 RPM
One rev. of feed handwheel . . . . .	.020''
Finest div. of feed handwheel . . . . .	.0001''
Power feed - adjustable . . . . .	.0001'' x .0015''

General Data

Hydraulic Reservoir . . . . .	.45 gallon
Chuck Pilot diameter	1''
Floor Space - total . . . . .	.63'' x 116''
Net Weight - approximate	11,600 pounds

MODEL H-24

Capacity

Rotary Table diameter	26"
Maximum work height with new wheel	10"
Wheel Collet flange diameter	10-1/2"
Maximum diameter swing in water pan	34"
Standard Wheel size	16" x 2" x 8"
Angular tilt - Convex	10°
Angular tilt - Concave	10°
Wheelhead stroke - maximum	17"
Vertical travel of knee - maximum	12"

Speeds and Feeds

Wheelhead spindle RPM	1400
Wheel traverse - infinitely adjustable	0 - 10 FPM
Table speed - continuously variable	37 - 155 RPM
One rev. of feed handwheel . . . . .	.020"
Finest div. of feed handwheel . . . . .	.0001"
Power feed - adjustable . . . . .	.0001" x .0015"

General Data

Hydraulic Reservoir	80 gallon
Chuck Pilot diameter	1"
Floor Space - total	63" x 123"
Net Weight - approximate	12,200 pounds

specification data

SPECIFICATION 1250-4

MODEL H-30

Capacity

Rotary Table diameter	31"
Maximum work height with new wheel	10"
Wheel Collet flange diameter	10-1/2"
Maximum diameter swing in water pan	34"
Standard Wheel size	16" x 2" x 8"
Angular tilt - Convex	10°
Angular tilt - Concave	10°
Wheelhead stroke - maximum	17"
Vertical travel of knee - maximum	12"

Speeds and Feeds

Wheelhead spindle RPM	1400
Wheel traverse - infinitely adjustable	0 - 10 FPM
Table speed - continuously variable	30 - 125 RPM
One rev. of feed handwheel	.020"
Finest div. of feed handwheel	.0001"
Power feed - adjustable	.0001" x .0015"

General Data

Hydraulic Reservoir	80 gallon
Chuck Pilot diameter	1"
Floor Space - total	63" x 123"
Net Weight - approximate	12,600 pounds

MODEL H-40

Capacity

Rotary Table diameter	40"
Maximum work height with new wheel	10"
Wheel Collet flange diameter	10-1/2"
Maximum diameter swing in water pan	47"
Standard Wheel size	16" x 2" x 8"
Angular tilt (Adjustment available to set chuck for flat grinding only)	
Convex	0°
Concave	0°
Wheelhead stroke - maximum	22"
Vertical travel of knee - maximum	12"

Speeds and Feeds

Wheelhead spindle RPM	1400
Wheel traverse - infinitely adjustable	0 - 10 FPM
Table speed - continuously variable	25 - 100 RPM
One rev. of feed handwheel . . . . .	.020"
Finest div. of feed handwheel . . . . .	.0001"
Power feed - adjustable . . . . .	.0001" x .0015"

General Data

Hydraulic Reservoir	80 gallon
Chuck Pilot diameter	1"
Floor Space - total	70" x 132"
Net Weight - approximate	15,000 pounds

specification data

ALL MODELS

STANDARD EQUIPMENT AND FEATURES

1. Hydraulic wheel head traverse.
 2. Manual and automatic work table vertical grinding feed.
 3. Power motion at rapid speed to worktable vertical slide under push button control for fast setup.
 4. Magnetic Chuck - 110 volt D.C. - concentric ring pole pattern (approximately 3/4" spacing).
 5. 16" x 2" x 8" grinding wheel and wheelholder.
 6. Continuously variable drive to chuck.
 7. Wheel guard mounted dresser, micrometer adjustment, hydraulic traverse, less diamond nib.
 8. Machine arranged for coolant system.
 9. Paint - NMTBA 7B (Medium Gray, Lacquer).
 10. Meehanite flame-hardened ways on upper base section.
 11. Standard package of wrenches.
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Safety

12. A.S.A. Code approved safety wheel guard.
 13. Ram Safety hold downs.
 14. Safety down limit on rapid power elevation.
 15. Double stage wiper protection of ram ways.
 16. Adjustable positive stop for ram motion.
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Lubrication

17. Wheel Spindle - grease packed and sealed for life.
18. Chuck Spindle - upper bearing grease packed and sealed; lower bearing immersed in oil reservoir.
19. Wheelhead Ways - Bijur automatic constant pressure lubricator, 5-quart reservoir, electrically controlled.
20. Chuck Slide Ways - centralized and metered grease lubrication, gun operated.

Hydraulic Equipment

21. Hydraulic Reservoir - positioned on floor beside grinder.
22. Pump fitted with full flow strainer with automatic (Tel-Tale) indicator, and with by-pass low Micron system cartridge filter.
23. Centralized Standard Control System mounted on panel over reservoir.
24. Multiple Pressure Check Panel.

Electrical Equipment

25. Set of Controls to JIC-EGP-1-1967 Standards.
26. Push Button Control Station conveniently mounted on front of machine.
27. Magnetic Chuck Rectifier and Controls with automatic demag and remote control (Neutrofier) EML-3-FD.
28. 7 - 1/2 HP, 1800 RPM, totally enclosed, hydraulic pump motor. *(H-16, H-20)*
10HP, 1800 RPM " " " " " (H-24, H-30, H-40)
29. 10 HP, 1800 RPM, totally enclosed, precision balanced wheelhead motor.

Engineering Support Data

30. One copy of a Certified Floor Plan mailed to customer and certified by our shop, usually within six weeks of receipt of order.
31. On machine 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.
32. 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.
33. 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

34. 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.
35. 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. Sundstrand may make a final part shipment followup with the customer 60 days before expected test runoff date.

Machine Installation and Startup Service

36. 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, 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 on rotary surface grinders, usually take from two to five days. Special customer requirements beyond this will be handled on an individual basis.

optional equipment

- ITEM 1 - 230 Volt, 60 Hertz, 3 Phase Motors and Controls.
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- ITEM 2 - Manual Ram Positioning Capstan with power assist unit.
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- ITEM 3 - Shoulder Grinding Attachment (intended for light shoulder grinding or grinding near shoulders with fine feed through graduated handwheel (1 revolution equals .0033" - finest division equals .0001").
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- ITEM 4 - Trabon metered lubrication to Wheelhead Ways, 5-quart reservoir, air-actuated pump, single central warning system to protect against failure with control through an electrical timer (Trabon # ALS Pump).
-
- ITEM 5 - Radial designed Magnetic Chuck for special applications, such as thin or narrow rim rings or small parts.
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- ITEM 6 - 0-100% variable holding power Magnetic Chuck, power supply and controls (Neutrofier EMLV-3-FD-4).
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- ITEM 7 - Production Cycle Controls for auto coarse and fine feed to size and retract at end of cycle; auto ram reciprocation and return at end of cycle.
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- ITEM 8 - Sundstrand Magnetic Coolant Separator, Model 22, 50 GPM capacity.
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- ITEM 9 - Sundstrand HELICONE Automatic Coolant Filter, Model C-40-90, 40 GPM and 90-gallon tank.
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- ITEM 10 - Motor Driven Coolant Pump and Piping, including 45-gallon tank and 1/4 HP integral pump and motor.

accessories

- ITEM 11 - Wheel Balancing Arbor
-
- ITEM 12 - Wheel Puller
-
- ITEM 13 - Wheel Holder Assembly (extra)
-
- ITEM 14 - Diamond Nib, 1 - 1/2 karat
-
- ITEM 15 - Balancing Stand # BT-1, bench style
-
- ITEM 16 - Balancing Stand # BT-2, floor style
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- ITEM 17 - Balancing Stand # BT-10 bench style (super-sensitive)

*ITEM 18- 20 HP, 1800 RPM
SPINDLE MOTOR*

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