G202 SG-320 SURFACE GRINDER

HARE&FORBES

MACHINERYHOUSE

Established 1930

Distributors of New & Used Workshop Equipment

MARCH 2002

SURFACE GRINDING MACHNE

MODEL: SG-320

OPERATION MANUAL AND PARTS LIST

PLANT SAFETY PROGRAMME

NEW MACHINERY HAZARD IDENTIFICATION, ASSESSMENT & CONTROL

Stock Code: G202

Description: Surface Grinder **Model:** SG-320 **Brand:** HAFCO

Developed in Co-operation Between A.W.I.S.A and Australia Chamber of Manufactures
This program is based upon the Australian Worksafe Standard for Plant(NOHSC:1010-1994)

Item No.	Hazard Identification	Hazard Assessment	Risk Control Strategies (Recommended for Purchase / Buyer / User)
A	ENTANGLEMENT	HIGH	Eliminate, avoid loose clothing / Long hair etc.
B	CRUSHING	LOW	Secure & support work material when grinding.
C	CUTTING, STABBING, PUNCTURING	MEDIUM	Isolate power to machine prior to any checks or maintenance being carried out. Do not adjust or clean machine until the machine has fully stopped.
D	SHEARING	MEDIUM	Make sure all guards are secured shut when machine is on. Isolate power to machine prior to any checks or maintenance.
E	FRICTION	MEDIUM	Keep hands and body away from grinding wheel.
F	STRIKING	MEDIUM	Ensure grinding wheels are tightly secured on spindle. Wear safety glasses. Stand clear of moving parts on machine. Check grinding wheels for damage before use. Remove all loose objects around moving parts. Ensure jobs are locked tight on table when grinding.
H	ELECTRICAL	MEDIUM	All electrical enclosures should only be opened with a tool that is not to be kept with the machine.
M	HIGH TEMPERATURE	LOW	Wear appropriate protective clothing to prevent hot sparks.
O	OTHER HAZARDS, NOISE.	LOW	Wear hearing protection as required.
Plant Safety Program to be read in conjunction with manufactures instructions			

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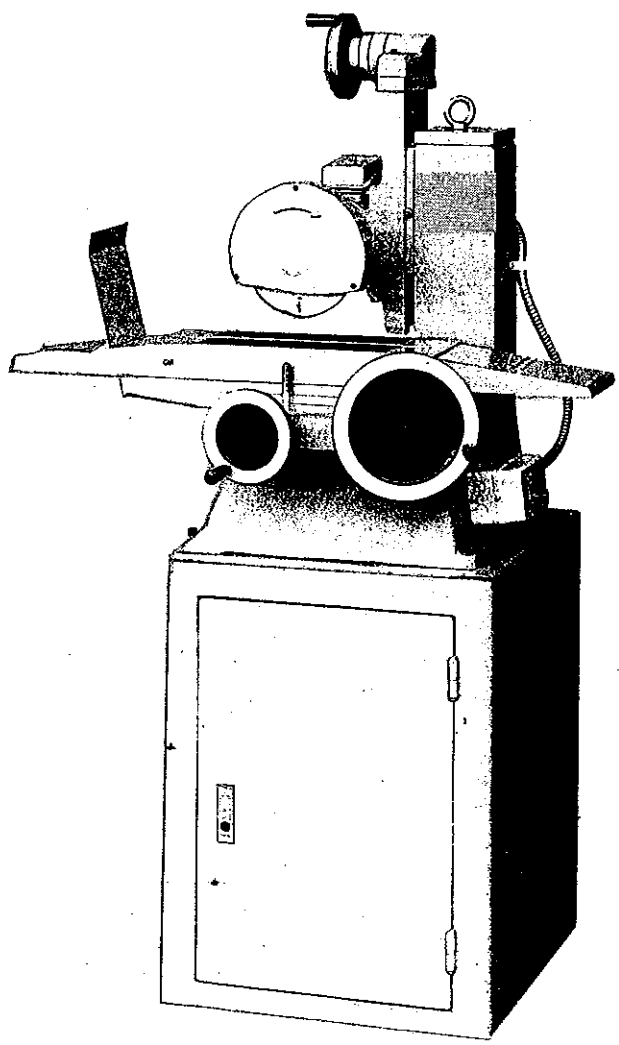
Authorised and signed by:
Safety officer: .....
Manager: .....

Date: Mar-02

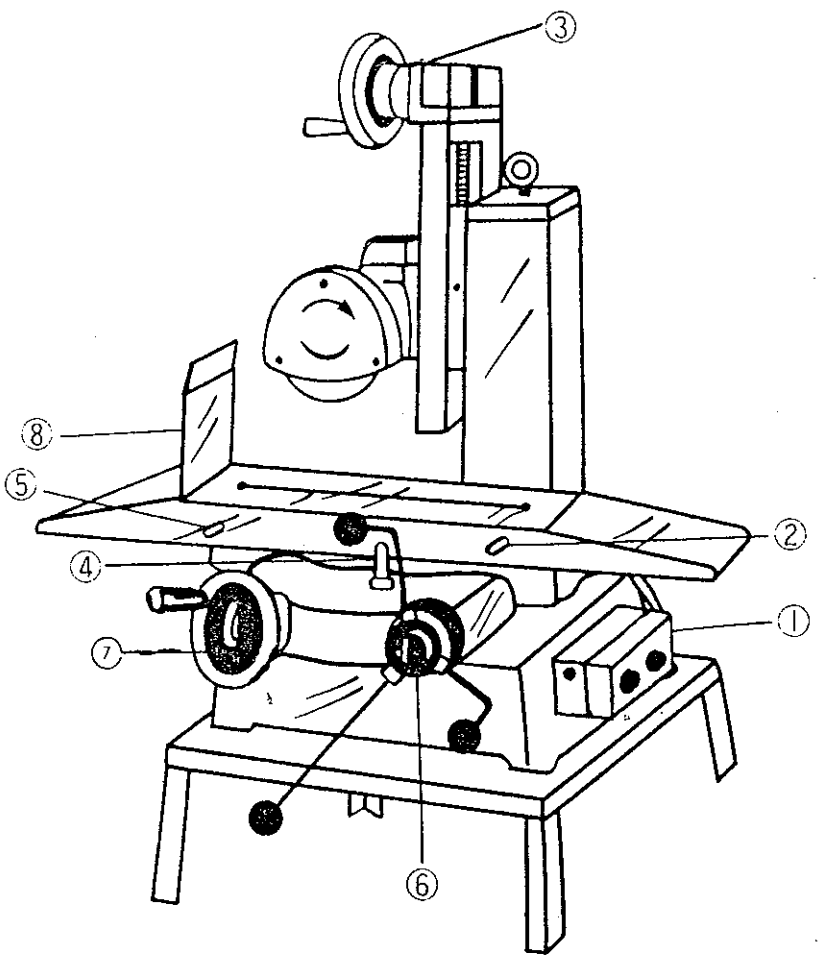
HAND OPERATED
SURFACE GRINDING MACHINE

SERVICE MANUAL

- ACCURACY
- FAST PRODUCTION
- LOW MAINTENANCE



Operating Controls and Set-Up Adjustments of the Precision Micromaster Surface Grinding Machine



1. Spindle " Start-Stop" Buttons.
2. Table Dog.
3. Vertical Adjustment Handwheel.
4. Table Dog Stop.
5. Table Dog.
6. Table Travel Handwheel.
7. Cross Feed Handwheel.
8. Shield Plate.

Installing or Relocating the Machine

In lifting or moving the machine it is rexomended that the rope be rigged as shown in Fig 1. Place wooden blocks or protective material be ween the rope and the machine wherever the rope is liable to damage any part.

If available, a "fork-lift truck" can be used to move the machine. The lift is located under steel bars positioned in the holes in the base of the machine

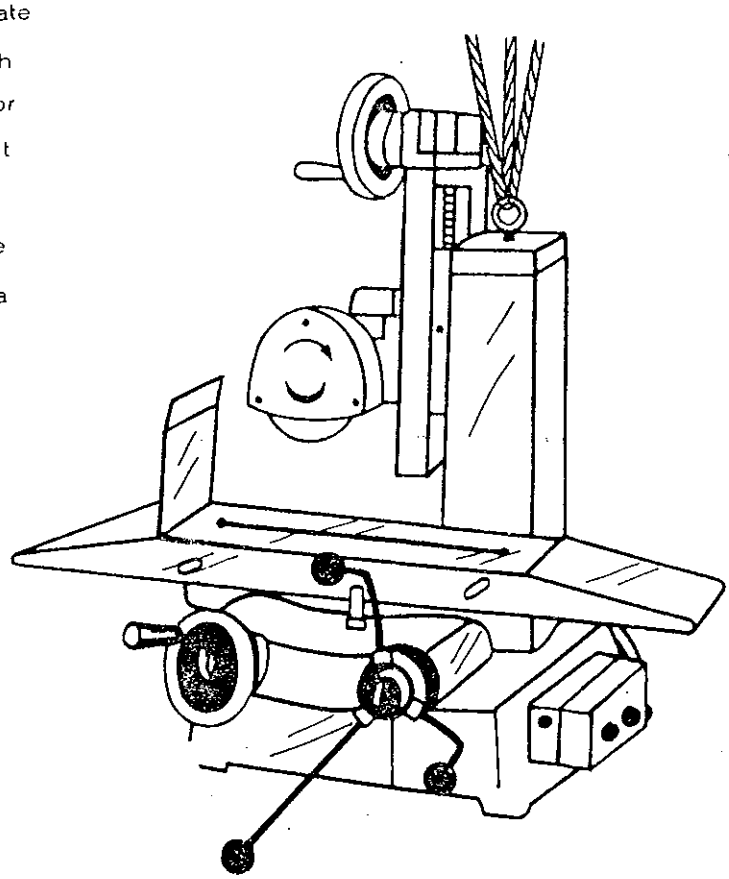
CAUTION: Do not push on the upright when moving the machine unless the rods and strap used in shipping are in place.The upright is a sliding member held on by its own weight and the cross feed screw. Considerable damage can be caused to the cross feed screw if the upright is tilted on its ways.

The machine should be located on a level foundation or floor, a solid vibrationless foundation being essential where the finest finish must be produced. If the machine must set on a wooden floor, locate it over a beam and on a portion of the floor which is free of vibration. In case the foundation or floor uravoidably transmits vibration to the machine, set the machine on a shock-absorbing pad.

While the machine in position, test the surface of the table both longitudinal any cross with a precision spirit level and drive a wooden shingle under any corner or corners that may be low. Make sure that all four corners are supported; then tighten the lag screws, test the level of the table surface again in both directions and readjust if necessary.

Connecting to Power Supply. The machine should be connected to the power line and properly grounded. The lines from the power source should be connected to the magnetic starter, mounted on the right side of the machine.

Checking Motor Rotation. Press the magnetic starter "start" and observe the direction of spindle rotation. The spindle should rotate clockwise as seen from the front of the machine. If the direction of rotation is counterclockwise, Change two wires at the starter.



Set-Up Adjustments and Operating Controls

Since the clamp screw merely holds the thrust collar in position and does not govern the closeness of adjustment, there is no reason to use excessive clamping pressure.

For normal surface grinding or when grinding shoulders with the outer face of the wheel, the clamp screw can be released, leaving the thrust springs to take up end play automatically.

Wheel Speed. When the Spindle is driven by a 60 cycle direct drive motor, the full load speed is 3450 R.P.M. using a 7" diameter wheel, ½" thick.

Wheel Guard. The wheel guard is a one-piece unit cover on the front. The cover opens upward and is held closed by four knurled-head screws. All that is required to remove the wheel is to lift the cover.

However, it is necessary to remove the wheel by guard remove the wheel.

Two clamp screws located on the clamping edge of the wheel guard support can be loosened and the guard tipped either side of horizontal if necessary

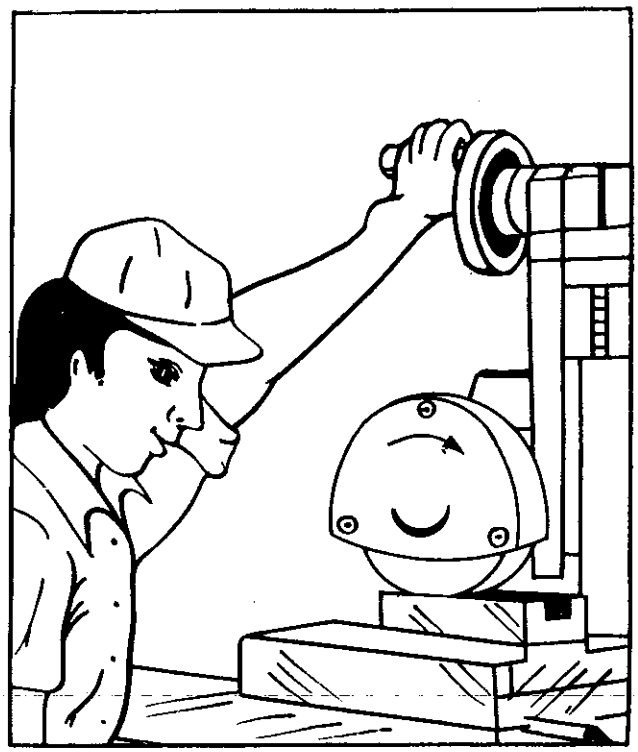
Warning: Always make sure that the guard is securely clamped before starting the machine; and never run a wheel without having the guard and its cover in place.

Care and Use of Grinding Wheels

Selecting the Wheel. In order to produce the desired quality of work in the shortest time real care is necessary in choosing the wheel which is best for the job at hand.

Mounting Wheels. One general-purpose grinding wheel and one wheel sleeve are furnished with the machine. When additional wheels are used, extra wheel sleeves should be procured so that each wheel can be kept on its own sleeve. Thus, in changing from one type of wheel to another, the wheel and sleeve can be changed as a unit and will remain concentric, requiring only a minimum a mount of truing.

The wheel should fit easily on the wheel sleeve, yet not loosely, for if it is loose it cannot be centered accurately and will consequently be out of balance. Do not wrap the sleeve with paper etc. to make a wheel fit when the hole is too large. it is



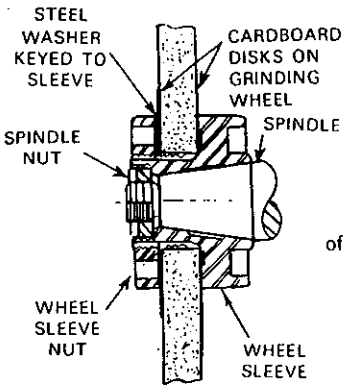
The vertical adjustment hand wheel is shown near the top of the upright

better from all standpoints either to discard such a wheel or recase the core.

A wheel that fits a trifle tightly may crack if forced on the sleeve. If the hole is only a little under size it can easily be scraped out to fit.

Warning: Before mounting a wheel, hang it in the air on one finger; then lightly tap the edge of the wheel and see if it gives a clear ringing sound. A wheel that does not ring clear is probably cracked and should not be used.

The inner of the two flanges between the wheel is mounted is a part of the wheel sleeve. The outer flange consists of a steel disk or washer which is keyed to the wheel sleeve to keep it from turning and loosening the clamping nut.



Proper mounting of grinding wheel.

To equalize the clamping pressure, washers of cardboard or rubber should be placed between the wheel and the two flanges, Most wheels of the size used on this machine have a ring of heavy blotting paper on each side, which serves the purpose.

Using the pin wrench furnished, tighten the clamping nut enough to hold the wheel firmly in place on the sleeve. Do not tighten too much, however, as excessive clamping pressure will crack the wheel.

Changing Wheels. In removing a wheel sleeve from the spindle, always use the wheel sleeve puller (furnished with the machine) to avoid any chance of cracking tthe wheel or damaging the spindle bearings by pounding. Remove the spindle nut (this nut has a left-hand thread the outer member of the wheel sleeve puller into the wheel sleeve and tighten the inner screw against the spin-die, thus, loosening the wheel sleeve without harmful jarring.

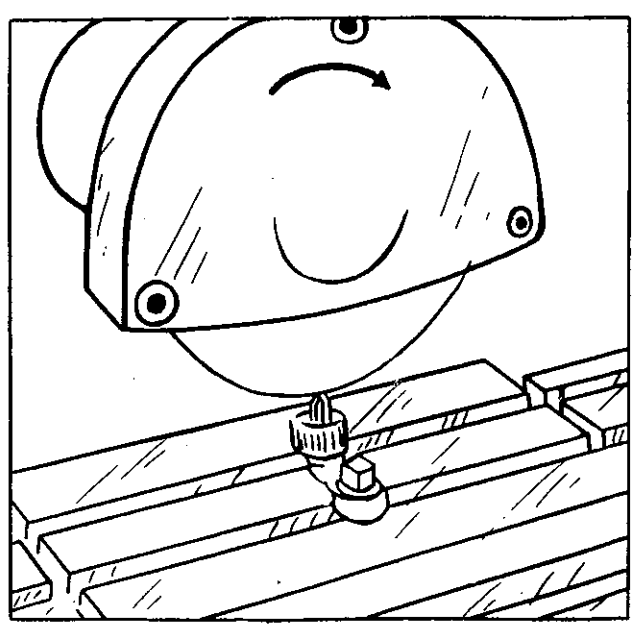
In putting a wheel on the spindle, examine both the wheel sleeve hole and the spindle end are perfectly clean. Then slip the sleeve onto the spindle, seat it by hand and tighten by means of the clamping nut and wrench.

Balance of Wheel. It is essential that the wheel run perfectly true and without vibration. Grinding wheels are balanced by the manufacturer and, in the case of wheels of the size used on this machine, should not require attention in this respect other than truing. A wheel that runs badly out of balance after truing should be discarded or returned to the wheel manufacturer-though in cases of necessity the condition may be corrected by digging out part of the wheel beneath the flange and filling with lead as indicated by a test for static balance.

Wheel Truing. A wheel truing fixture is furnished with the machine. The truing diamond (furnished) may be applied to the wheel along any line on the lower half of the wheel circumference, though preferably at the bottom of the wheel as shown. To prevent gouging, the center line of the diamond tool should point slightly the center of the wheel in the direction of movement of the wheel surface.

The wheel should be trued each time it is put on the spindle and whenever it becomes loaded, dull or glazed. Pass the diamond across the wheel with a slow, steady manual cross feed, taking care to avoid any longitudinal movement of the table.

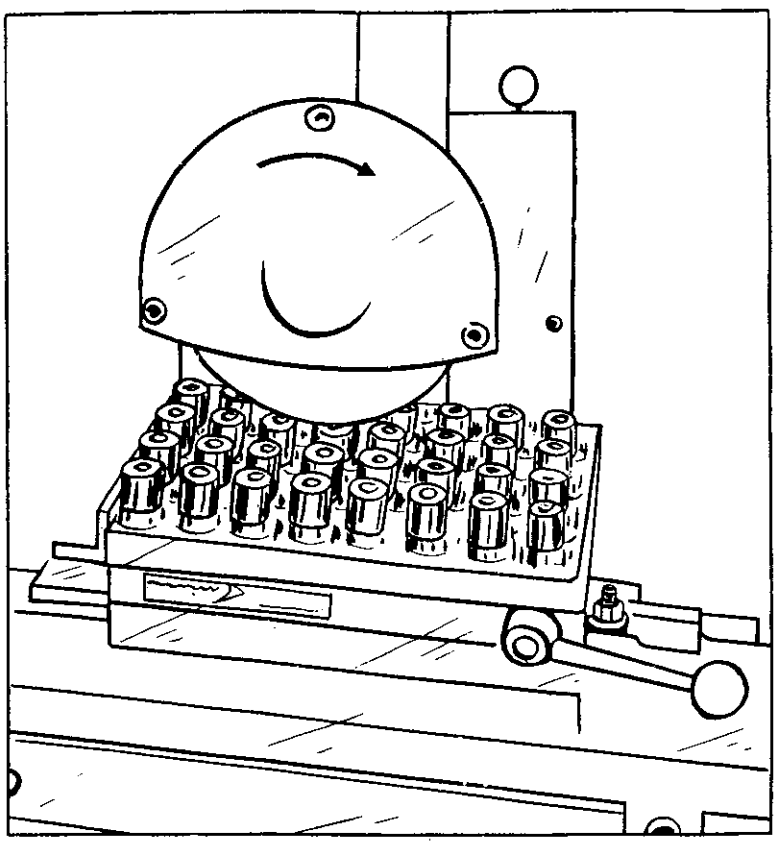
In truing a wheel for for rough grinding, take a cut about 0.01m/m deep in one pass of the diamond across the wheel and finish with a similar cut 0.000,25" deep. If the wheel is to be used for finishing grinding, take two 0.01m/m cuts; then take twc or three additional cuts removing about 0.000,25" each time, and finally pass the diamond across the wheel once or twice without further advance of the wheel.



Wheel truing fixture in use.

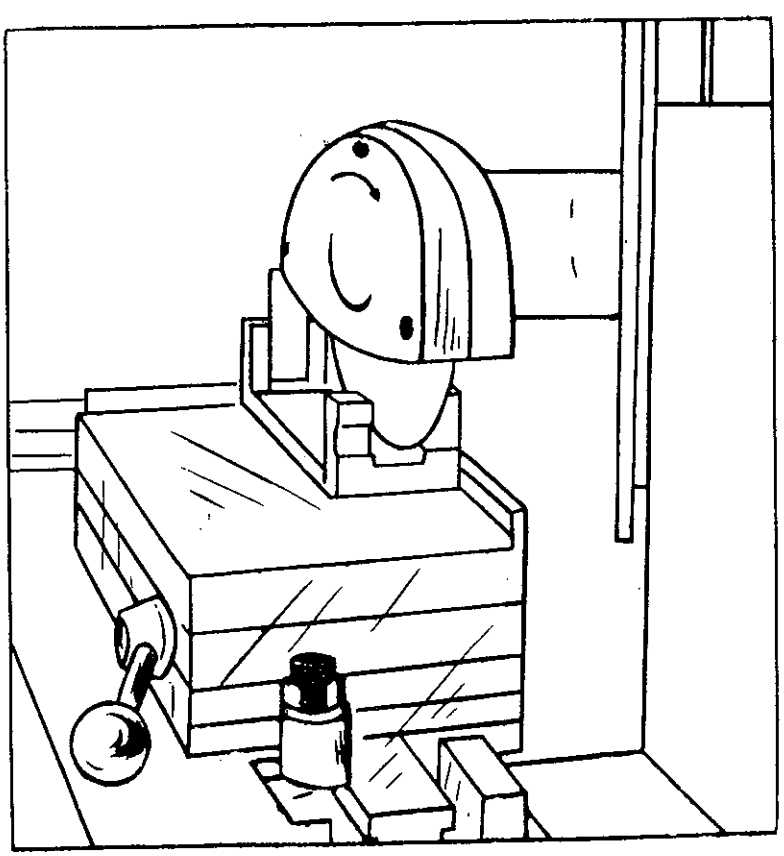
The figures stated are approximate and under some conditions should be varied somewhat to give desired results.

Typical Operation



A representative production job grinding the surfaces of thirty-two pieces with one loading of the permanent magnet-type chuck.

Movable wheel slide upright contributes immeasurably to accurate slot grinding.



Optional Mechanism and Additional Equipment

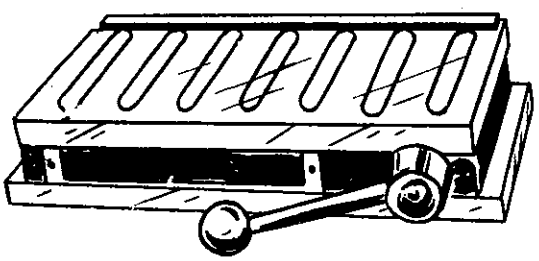
(Furnished at Extra Cost)

Various items of additional equipment available as extras are described and illustrated in this chapter. Instructions are also given on their set-up and use.

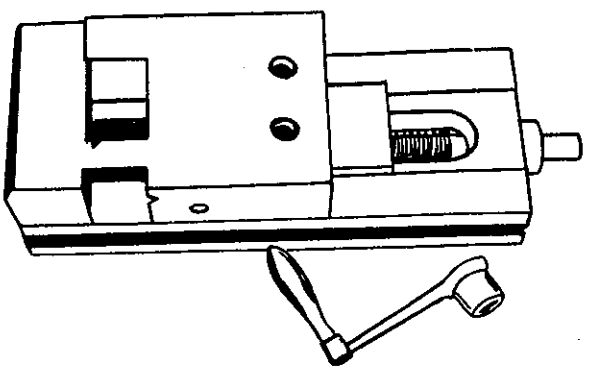
These extras include Magnetic Chucks and Precision Grinding Vise.

Magnetic Chucks

The Rectangular Model Permanent Magnet Chucks provide a quick, easy means of holding a variety of ferrous work for surface grinding. A 180° movement of the control lever turns the chuck on or off; and since the chuck does not use electric current, it can be left turned on for long as desired without heating.



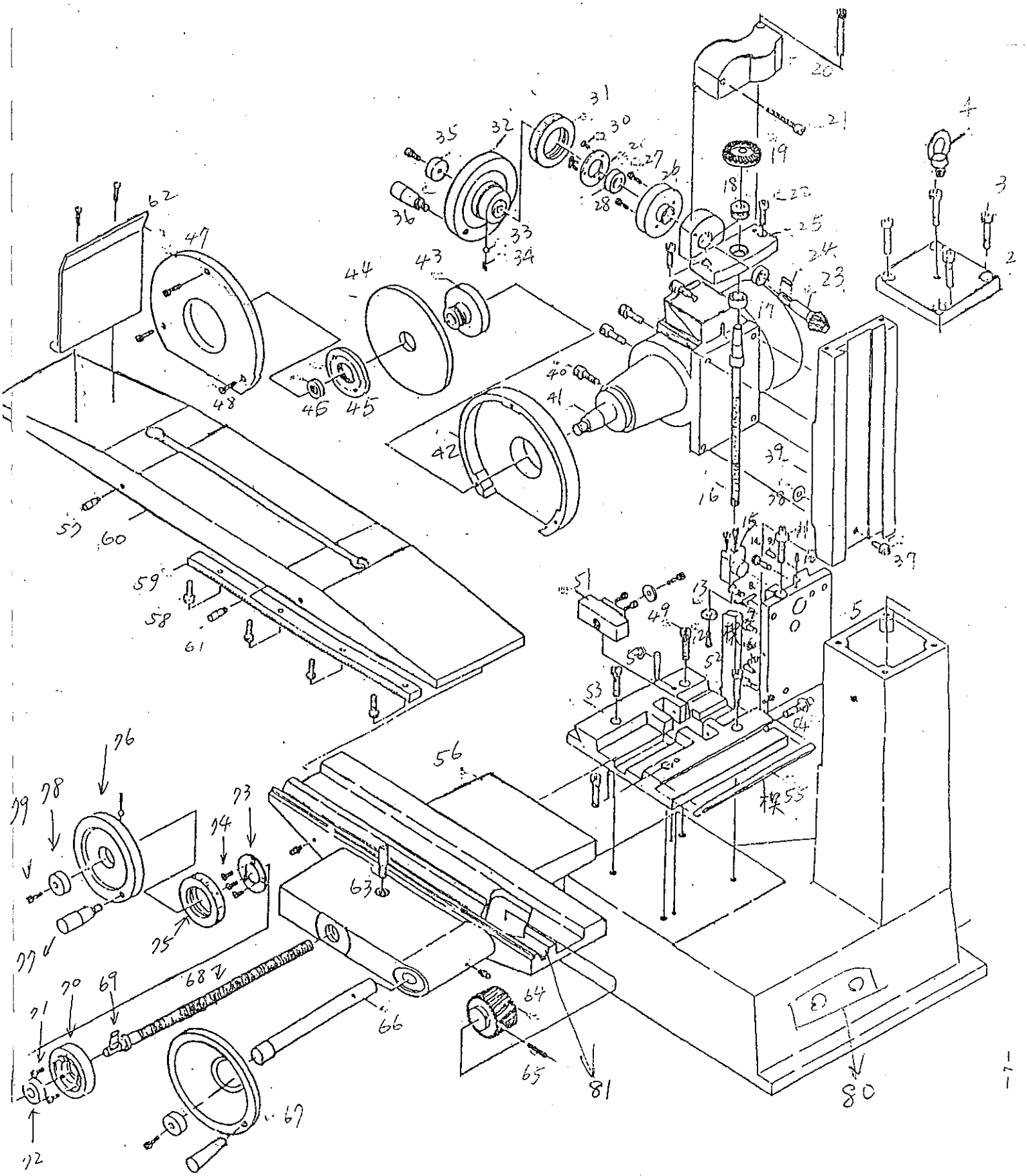
Permanent Magnet Chuck.



Precision Grinding Vise

For highest accuracy in grinding work parallel, the top surface of the chuck should be groung each time the chuck is mounted on the machine. Be sure that the chuck is turned on before doing this, and remove only the minimum amount of metal required to grind the entire top surface.

The chuck should not be subjected to excessive heat, shocks or blows, and the top should be kept free from pits and scratches. Regrind the top surface occasionally if necessary, as a smooth surface is essential for grinding work parallel.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PARTS LIST

REF. NO.	PARTS NO.	PARTS NAME	Q'TY
1	CT-001	Base	1
2	CT-006	Cover	1
3		Socket head cap screw	4
4	CT-007	Lifting ring	1
5	CT-033	Elevating base	1
6	CT-034	Adjust board	1
7		Oiler	3
8		Key	1
9		Socket head cap screw	4
10		Taper pin	2
11		Headless set screw	1
12	CT-011	Adjust screw	1
13		Socket head cap screw	2
14	CT-038	Washer	2
15	CT-035	Elevating nut	1
16		Socket head cap screw	4
17		Elevating screw	1
18		Ball bearing	2
19		Thrust bearing	1
20	CT-030	Gear	1
21		Cover	1
22		Socket head cap screw	2
23		Socket head cap screw	4
24	CT-029	Gear shaft	1
25		Key	1
26	CT-038	Seat	1
27	CT-015	Bearing block	1
28		Socket head cap screw	4
29		Bearing	2
30	CT-016	Locking washer	2
31		Round head plus screw	6
32		Dial	2
33	CT-017	Handwheel	2
34		Steel ball	2
35		Spring	2

PARTS LIST

REF. NO.	PARTS NO.	PARTS NAME	Q'TY
36	CT-019	Handle	2
37		Chain fixing screw	1
38	CT-036	Washer	1
39		Elevating dovetail groove	1
40	CT-031	Headless set screw	1
41		Motor	4
42		Rear cover of grinder	1
43	CT-045	Slide	1
44	CT-039	Grinder	1
45		Collar	1
46	CT-046	Nut	1
47	CT-042	Front cover of grinder	1
48	CT-037	Socket head cap screw	1
49		Socket head cap screw	3
50		Double round key	4
51		Taper pin	1
52		Nut	2
53	CT-012	Socket head cap screw	2
54		Longitudinal feed dovetail Groove	2
55	CT-009	Adjust screw	2
56	CT-011	Gib	1
57	CT-010	Dovetail groove	1
58	CT-008	Socket head cap screw	1
59		Rack	4
60	CT-025	Work bench	1
61	CT-024	Limited lever	1
62	3H-026	Fender	2
63	CT-026	Limited level	1
64	CT-023	Cross feed helical gear	1
65	CT-020	Spring pin	1
66		Cross feed shaft	1
67	CT-021	Handle set	1
			1