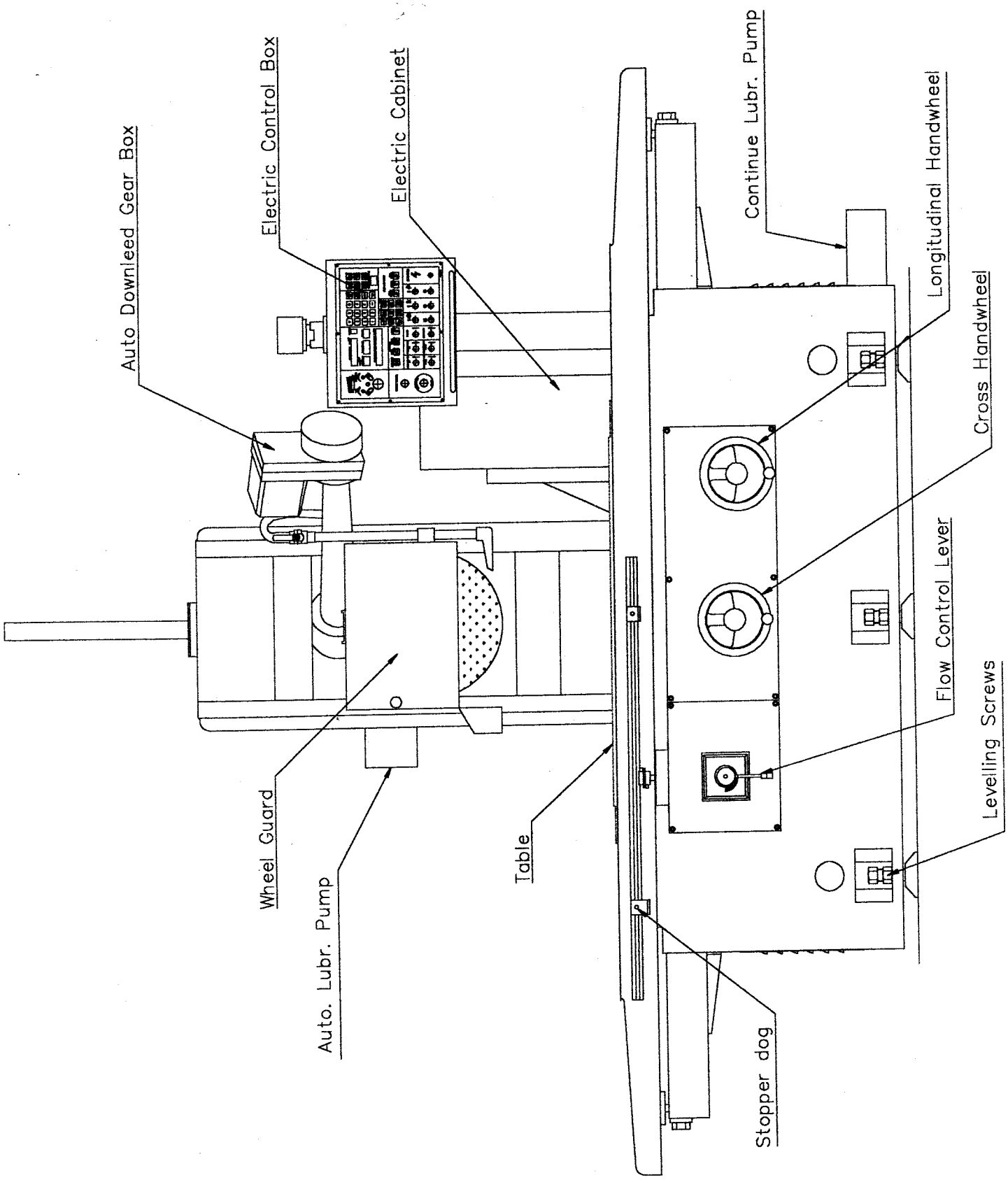
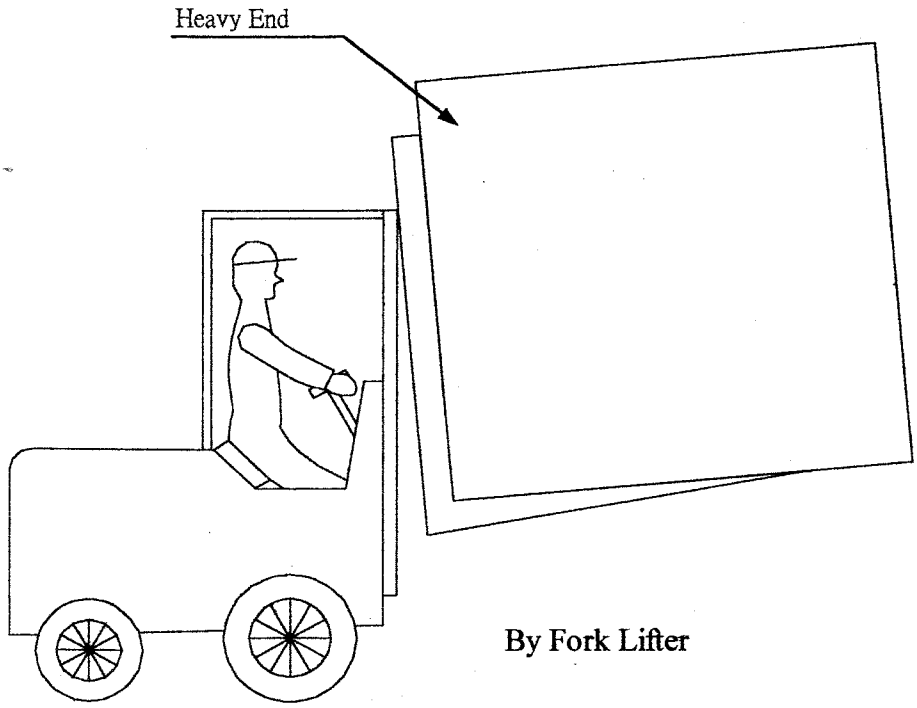
CONTENTS

Main Parts Of The Machine

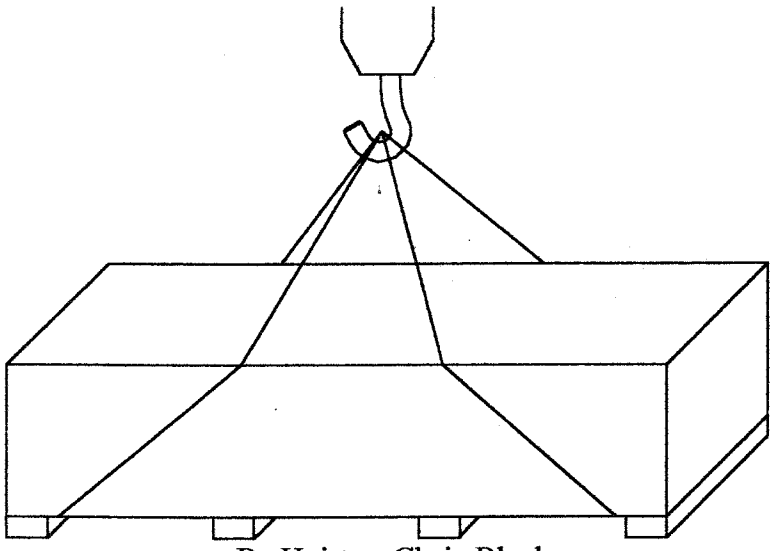


***This machine has been fully tested, adjusted and inspected for correct alignment and operation prior to shipment. In transit or installation, please ensure that the machine is not bumped when being rolled or set down to avoid any failure.**

1). **Transitions**



By Fork Lifter



By Hoist or Chain Block

*Whatever to use fork lifter or hoist to transit the crate, be handled carefully and keep it in balance is very important.

2). **Unpacking**

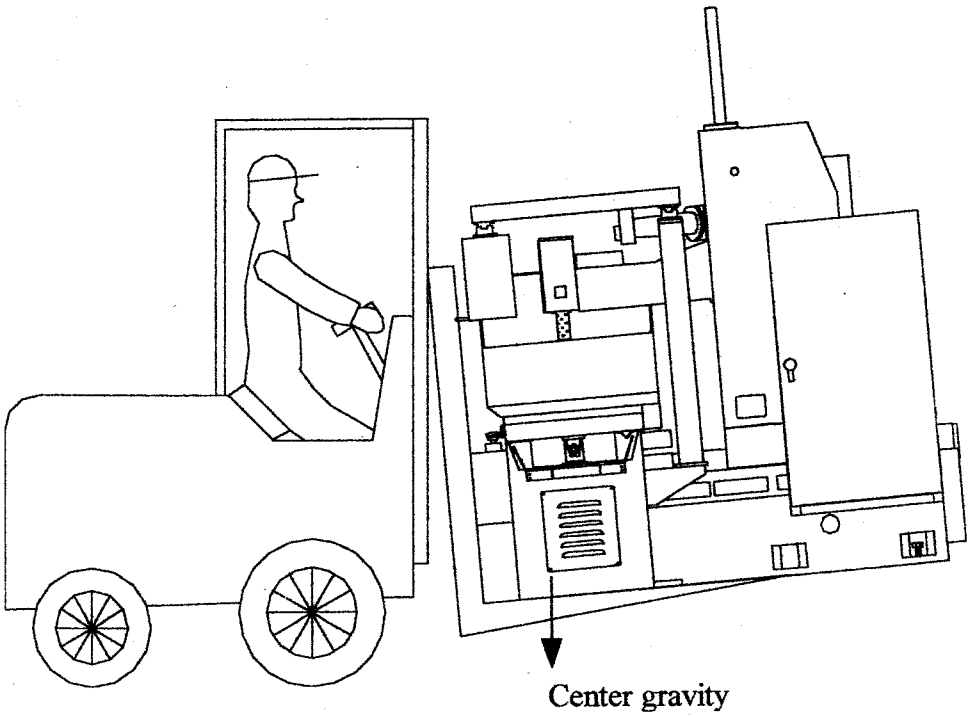
2-1. When unpacking the crate, starts from the upper cover, then follow the sequence of front, rear, left and right.

2-2. Do not use hammer to break down the crate, please use nail extruder instead of.

2-3. To avoid damaging the machine or paint, please pay more attention when take away the wooden cover.

2-4. Loosen the fixing screws before lifting machine.

2-5. Use the fork lifter to lift up the machine as the figure below.



***CAUTION: Do not use hoist to lift up these column movement type of machine use fork lifter all the time.**

3). Choice of site

The output of the machine and the degree of accuracy of components produced Depend to a very special degree on the correct choice of site for the erection of The machine.

The grinding machine should be handled just as carefully as a jig-borer.

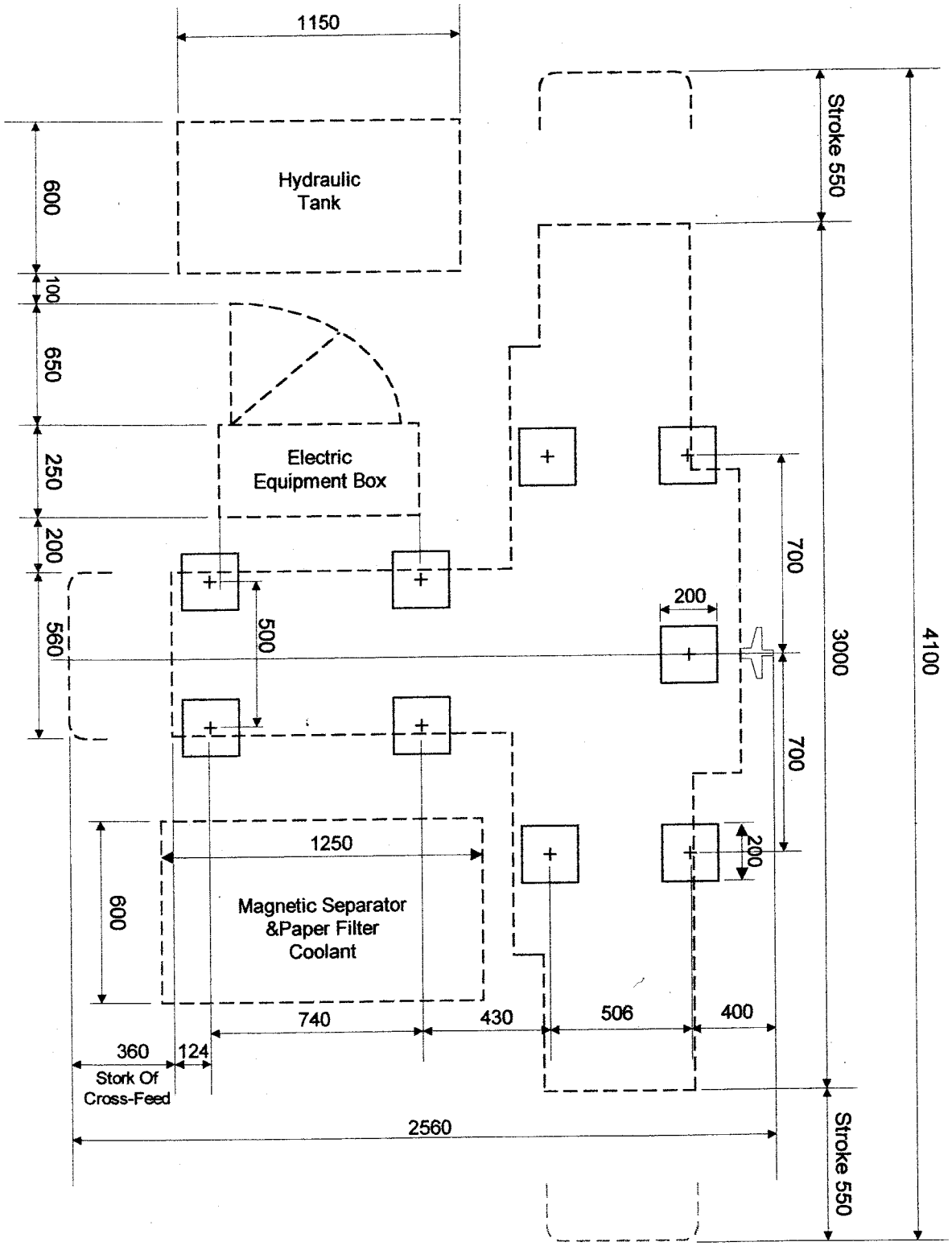
After all, extreme precision is demanded of both types of machine.

Grinding machines are often found between milling, shaping, drilling and even Slotting machines, without any thought of the consequences of such planning.

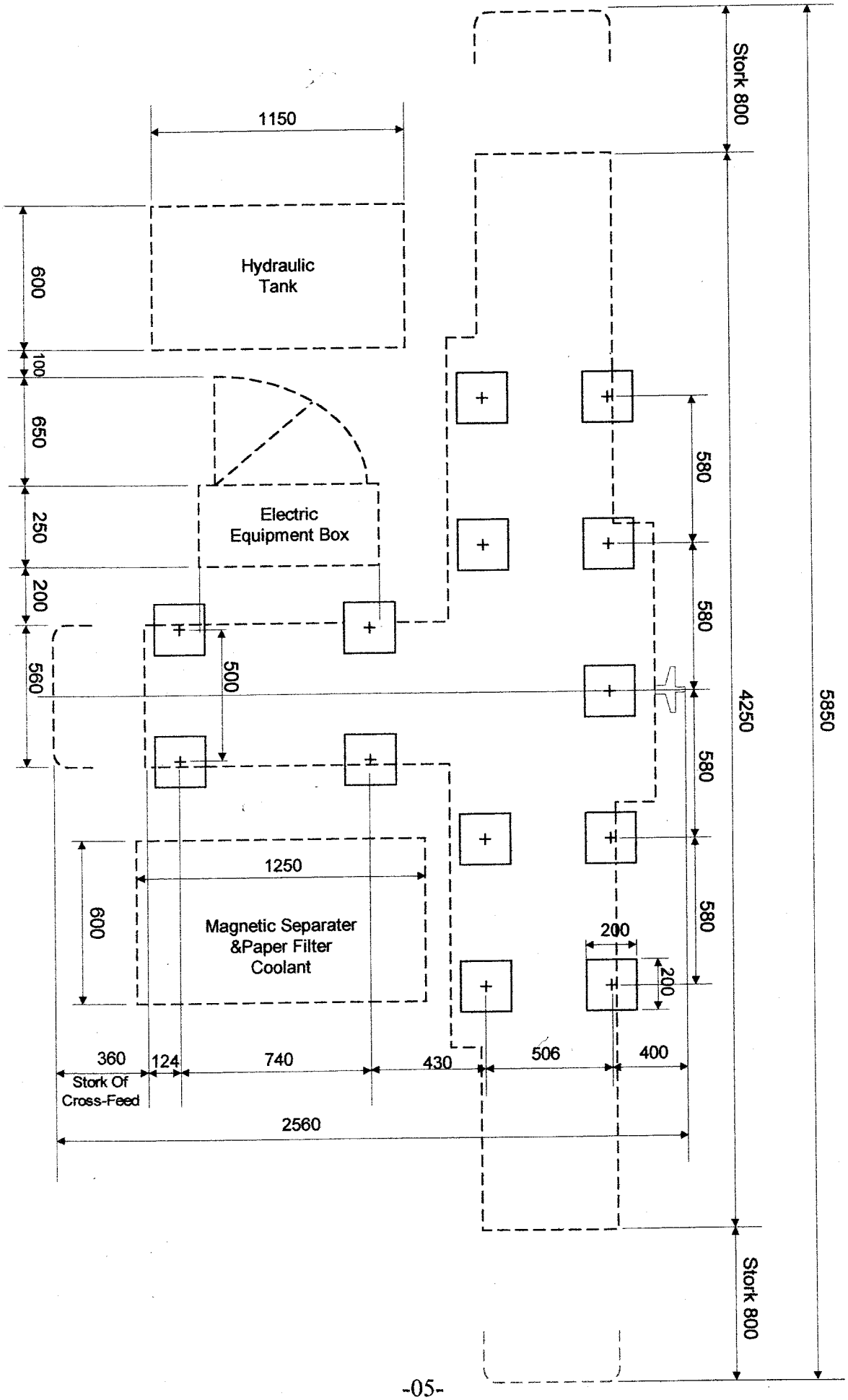
In such cases, it is impossible to achieve good surface finishes, as the vibrations From the milling machines or the jerks from the reversal of the shaper stroke etc. Are transmitted to the grinding machine. Chatter marks can be found on the ground Surface, which are due to these extraneous influences.

Unsteady floor is unsuitable for taking the machine as it results in distortion of the machine bed.

(1).2040 Series Foundation Diagram



(2).2060 Series Foundation Diagram



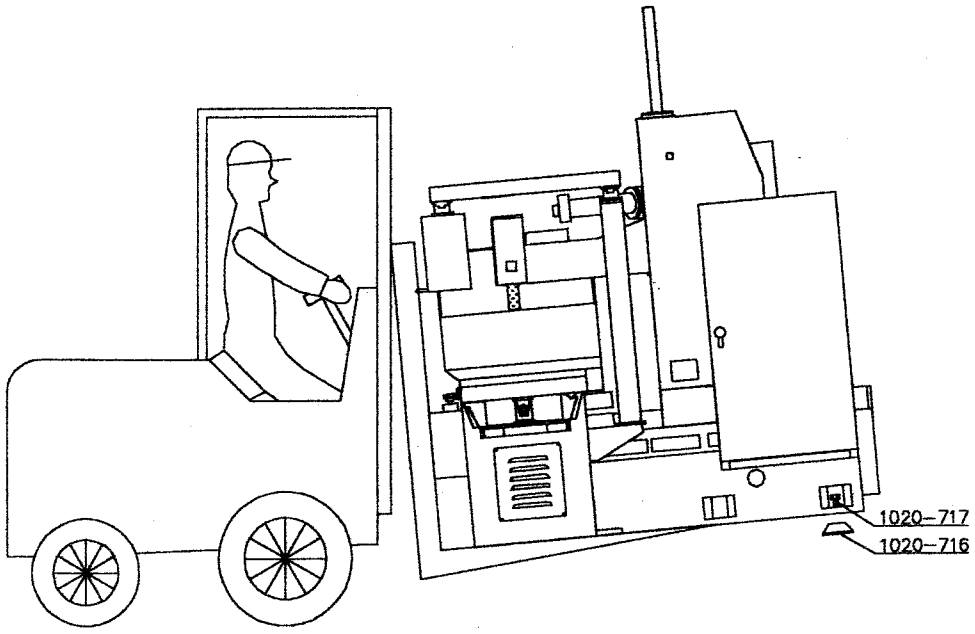
4). Installation

4-1. Power Consumption

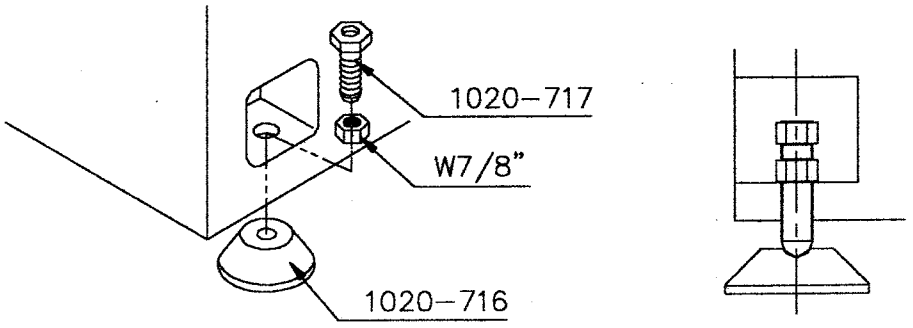
2040SD	Total: 13KW
2060SD	Total: 13KW

4-2. Foundation

Use fork lifter to lift up the machine as the figure below.



* Screw the leveling screws (1020-717) on the machine base with nuts. For easy leveling and more steady of the machine, make screws as deep as possible.
* Lay down the machine slowly, to let the round head of leveling screws fall into the center hole of leveling pad (1020-716) (See the figure below)



* Then leveling the machine.

5). Leveling the machine

As following procedures:

5-1. Use longitudinal handwheel to let table at the middle position.

5-2. Leveling the machine by two spirit levels in longitudinal and cross position. In this case, we suggest:

a. Screwing up the leveling bolts #1,3,4,7,8 and adjust machine's leveling by use bolts #2,5,6,9 only. (Fig.a)

b. After leveled, then drive table to left end and adjust leveling bolts #1,7,8. (Fig.b)

c. Drive table to the right end adjust leveling bolts #3,4. (Fig.c)

d. Drive table back to the middle position and re-check.

e. Do the procedures b - d till the precision of machine is arrived at the condition of as better as possible.

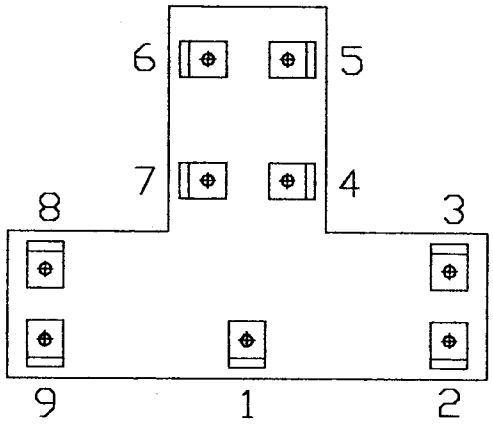


Fig. a.

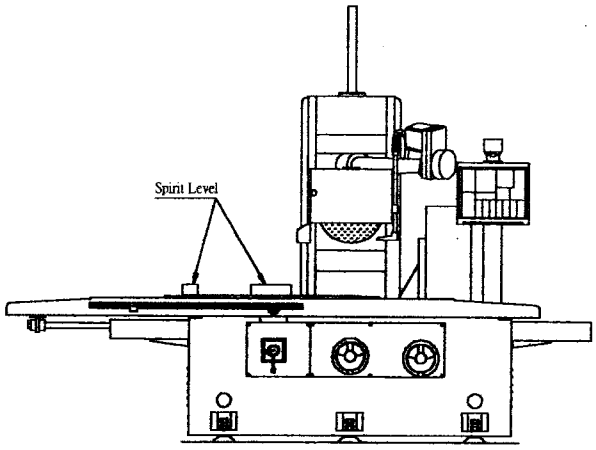


Fig. b.

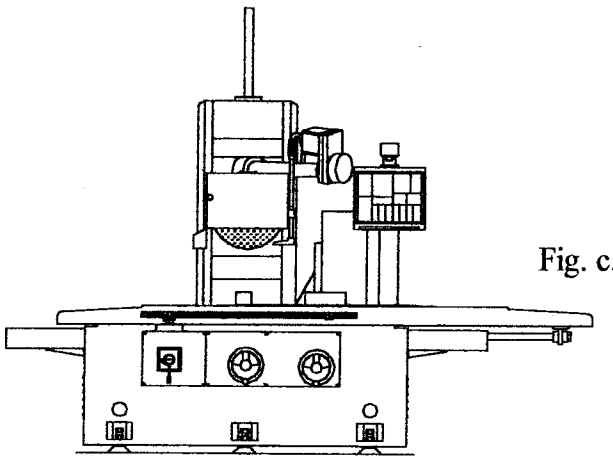


Fig. c.

NOTICES BEFORE OPERATION MACHINE:

1. Accordind to the operation manual electric diagram .to connect the power supply. and be sure the power cable capacity must over than machine total consumption 1.5 times.
2. The ground of installing machine must have enough space to lay out the machine and its components and mobile parts moving area .
3. To wear the safty glasses when operation machine.
4. To confirm the rotation of spindle is clockwise,before installing the wheel.
5. To confirm the wheel is fixed well.
6. To confirm the wheel guard is locked well.
7. To confirm the wheel is balanced well.
8. To confirm the wheel material is matched with work piece quality.
9. To confirm mobile parts(slide way, leadscrew etc.) with lubricant oil .
10. To confirm there are moderate hydraulic oil(quality&quantity) in the tank.
11. To confirm there are moderate lubricant oil(quality&quantity) in the lubricantor.
12. To confirm there are moderate grinding liquid(quality&quantity) in the coolant.
13. Whether the filter paper setting up correct.(optional accessory)
14. To confirm the hydraulic flow control leveler set on "OFF" position.
15. **Warning**:(It may cause the risks immediately if not comply with the notices strictly as description below).
    a. Confirming the rotation of spindle is clockwise.(before confirming, please do not install the wheel set).
    b. Confirming the workpiece is(are) hold perfectly .
    c. Never let the wheel linear velocity over its specification.
    e. Never let the wheel overfeed.
    f. Rebalancing the wheel is necessary,whenever the the wheel is running vibrated.
    g. Never wear spacious cloth & wear hair dishevelled,when operation machine.
    h. Keep person(s) out the machine operation area except the operator.
    i. The electric equipment must be earthed.

SELECT AND BALANCE OF THE GRINDING WHEEL

COMMENTS FOR GRINDING

1.When mass cutting, the grinding wheel roughness is at about 30-40, high speed is required for wheel dressing.

2.For fine finish, the grinding wheel roughness is at about 40-80. Slow speed is required for wheel dressing.

3.Distortion factors of workpiece.
a) Overload capacity.
b) The Crossfeed and longitudinal movement of the table are too slow.
c) Grinding wheel becomes blunt or clog with chips.

4.If the workpiece appears to burn, may be the grinding wheel is hard, or the wheel is blunt or clogged by chips.

GRINDING WHEEL RECOMMENDATION

1.Maintence:
Do not bump, and keep away from wet or hot place.

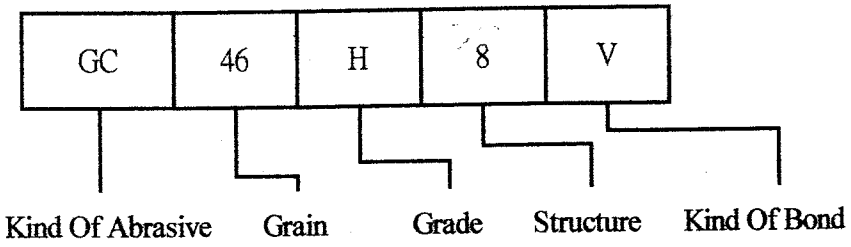
2.Selection:
If it has no damage or crack, you must ensure it sounds clearly.

3.Speed:
It must not faster than the speed shown on the wheel blotter.

WHEEL SELECTION TABLE

Material \ Wheel Specification / Wheel Diameter		150mm--205mm	205mm--355mm	355mm--510mm
STEEL	<HRC 25	WA A 46K	WA A 46J	WA A 36J
	<HRC 25	WA 46J	WA 46I	WA 36I
ALLOY STEEL	<HRC 55	WA 46J	WA 46I	WA 36I
	<HRC 60	WA 46I	WA 46H	WA 36H
TOOL STEEL	<HRC 60	WA 46I	WA 46H	WA 36H
	Series 400	WA 46H	WA 46G	WA 36G
STAINLESS STEEL	Series 300	WA 64I	WA 46H	WA 36H
	<HRC 25	WA 36J	WA 30J	WA 36I
CAST IRON	Ordinary	WA 46J	WA 46I	WA 36I
	Special	WA 46I	WA 46H	WA 36H

GRINDING WHEEL MARKINGS



COMPONENT OF ABRASIVE AND MATERIAL

Abrasive	A	WA	H	C	GC
Material	General Steel	Heat-treated Carbon/alloy Steel	High speed Steel	Cast iron Non ferrous	Supper hard Material Tungsten Carbide steel

SIZE OF GRAIN

Coarse	10-24
Medium	30-60
Fine	70-220

Grinding Condition \ Grain	Coarse	Fine
Grinding Capacity	Great	Small
Surface Roughness	Coarse	Fine
Workpiece Hardness	Soft	Hard
Contacted Dimension	Wide	Narrow
Wheel Diameter	Big	Small
Bond Type	Sticky	Brittle

GRADE

Strength of the bond, which hold abrasive

Soft	A-H
Medium	I-P
Hard	Q-Z

Grade / Grinding Condition	Soft	Hard
Workpiece Hardness	Hard	Soft
Contacted Dimension	Wide	Narrow
Wheel Speed	Quick	Slow
Movement Of Works	Slow	Quick
Precision	Good	Small
Operator	Skill	Brittle

STRUCTURE

The Number Refers To the Relative Spacing Of The Grains Of Abrasive:

Close	0-5
Medium	6-9
Wide	10-12

Structure / Grinding Structure	Wide	Close
Workpiece Hardness	Coarse	Fine
Contacted Dimension	Wide	Narrow
Wheel Speed	Soft	Hard

BOND

Type	Vitrified	Silicate	Resinoid	Rubber	Shellac
Mark	V	S	B	R	E

REFERENCE FOR GRINDING CONDITION

Material / Finish	Cast Iron, Soft/Harden steel	Stainless and Heat resistant steel	Tool steel	Cross Feed
Rough	0.0006-0.0012" 0.015-0.03mm	0.0008-0.0012" 0.02-0.03mm	0.0008-0.0016" 0.02-0.04mm	Under 1/2 Of Wheel Thickness
Fine	0.0002-0.0004" 0.005-0.01mm		0.0002-0.0006" 0.005-0.015mm	Under 1/4 Of Wheel Thickness

CROSS FEED AND DOWN FEED

Feed Capacity	Great	Small
Grinding Resistance	Great	Small
Heat Produced	Much	Less
Surface Finish	Coarse	Fine
Wheel Worn-out	Much	Little

BALANCE OF WHEEL

Accurate grinding, brightness of workpiece, spindle and bearing life are greatly concerned with the balance of wheel, and also eliminate the wheel's internal stress. First balance of the grinding wheel: fixed grinding wheel on the spindle tightly, then dress it by diamond dresser till it is precise. But in order to obtain real precision of grinding wheel, you have to take off the grinding wheel and rebalance once after first balance.

Because different material workpiece has to be grinded by different quality grinding wheel,we suggest you prepare a seldom used grinding wheels with their special flanges. So that you can prevent trouble from taking off and rebalancing the grinding wheel.

After assemble the wheel and flange (Fig 1), put on the balance rod and place on the Balancing stand(Fig 2), then follow the points below:

1. Adjust the balancing stand level (Fig 3).
2. Let the wheel swings to find out the center of gravity and then mark with a [V], (Fig 4) Lock the balancing block [B] on the opposite side of center of gravity and do not move any more.(Fig 5).
3. Put two balancing blocks [P] at equal distance form [B] (Fig 6).
4. To check balance, rotate the wheel at about 90°each time. If not balance; just move the balancing blocks [P] to a well-balanced place.
5. After balancing, you must let the wheel running under normal speed for at least five minutes.
6. Since long-time grinding will make the wheel loses its balance. You must check and re-balance it occasionally.
7. If use coolant supply during grinding, do not start coolant unless the wheel is running, otherwise the wheel will be out of balance because of absorbing the water. If the wheel stand for a long time, will make the water concentrate at the lowest point. Therefore, after grinding for a period of time, idle running is necessary for eliminating unbalance.

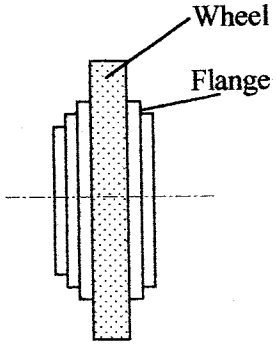


Fig. 1

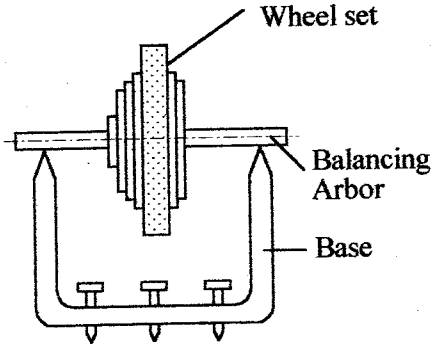


Fig. 2

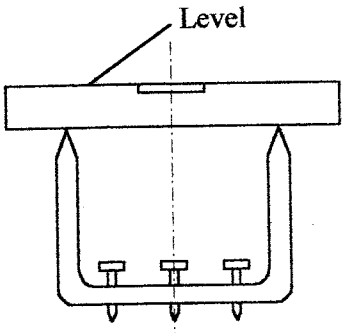


Fig. 3

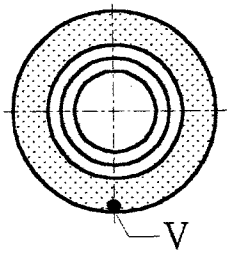


Fig. 4

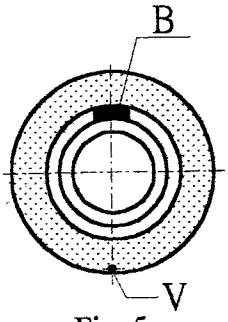


Fig. 5

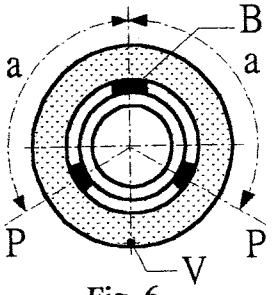
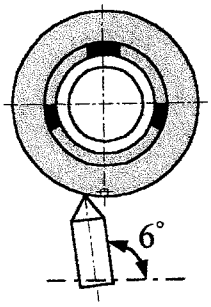


Fig. 6

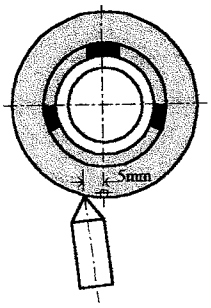
HOW TO DRESS GRINDING WHEEL AND USE DIAMOND DRESSER

When you dress grinding wheel, diamond inevitably wear along the machining direction, so that the diamond dresser has to be put at the position of angle 6°slant to keep its sharps. (Fig. 1)

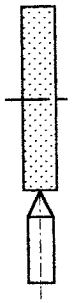
- When you are going to dress the grinding wheel, put the sharp top of diamond dresser at approximately 5mm to the left bottom of grinding wheel, and stop longitudinal movement of working table, then, move cross feed front and rear slowly to dress.(Fig. 2)
- When you dress grinding wheel, you have to start from the middle because grinding wheel usually wear more on two sides than in the middle. If you dress from two sides to middle, then, it will produce pressure. (Fig. 3)



(Fig. 1)



(Fig. 2)


(Fig. 3)

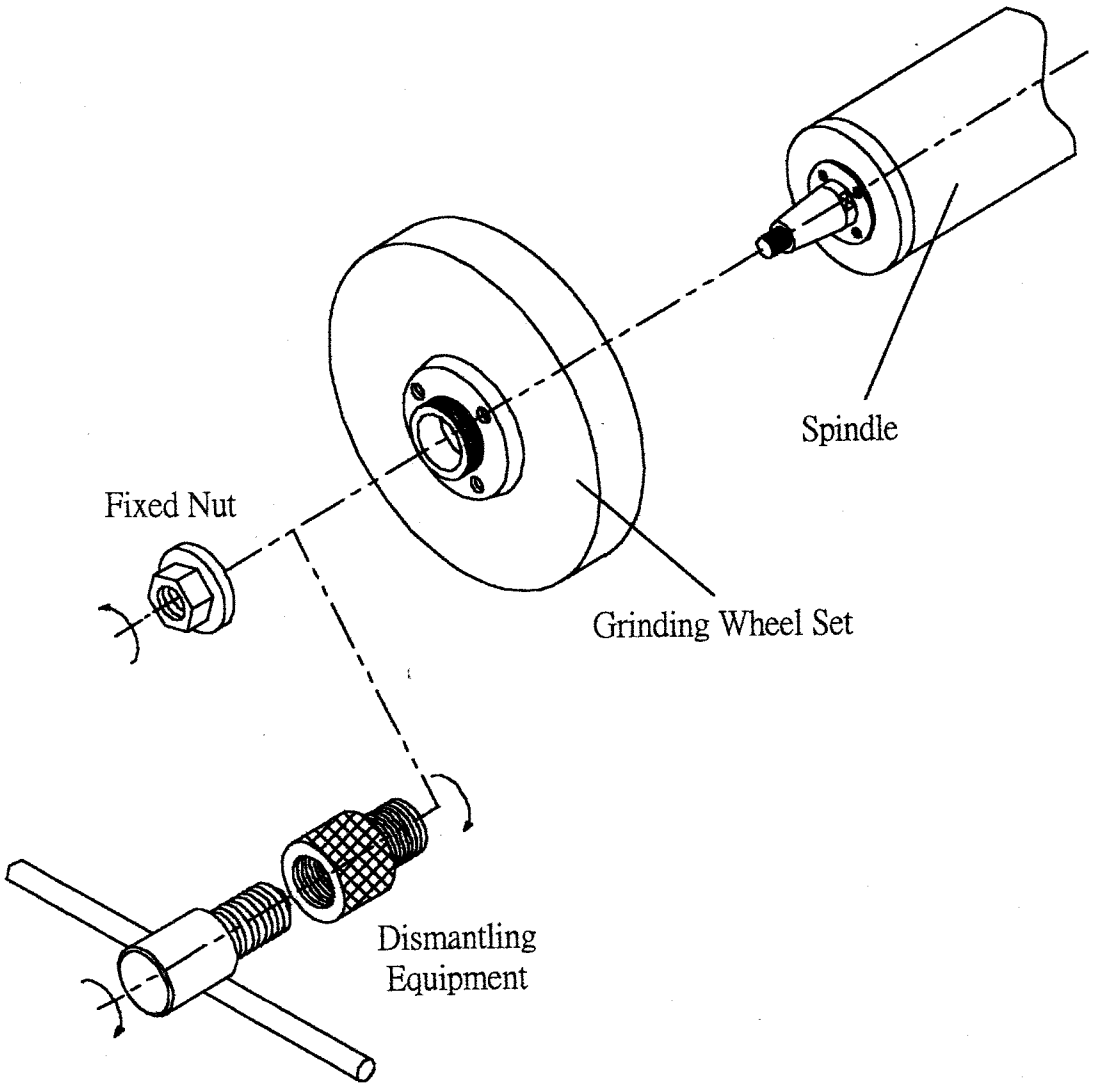
Dressing Speed and capacity can influence the grinding surface, if you don't ask for best surface or you want bigger grinding capacity, the rough dressing is enough. (Dressing capacity 0.01—0.03mm each time and coordinate with fast speed across the grinding wheel three or four times). If you ask for best surface or last finished grinding, then the grinding wheel has to be treated with precision dressing. (Dressing capacity from 0.02,0.01,0.005mm reduced gradually and coordinates with slow and steady speed across grinding wheel).

Generally speaking, the usage life of grinding wheel and diamond dresser, precise dressing is longer than rough dressing.

INSTALLATION AND DISMANTLING OF THE GRINDING WHEEL

Installation:

1. Choose install the bigger conical surface of grinding wheel toward inside, then carefully put it on the spindle.
2. Firmly tighten the fixed nut **counterclockwise** (by moveable wrench or open ended wrench)

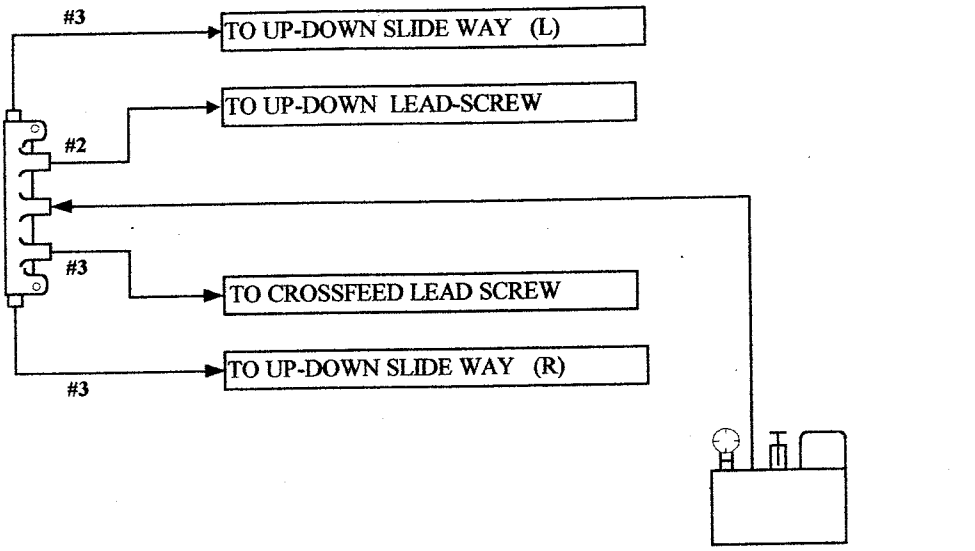


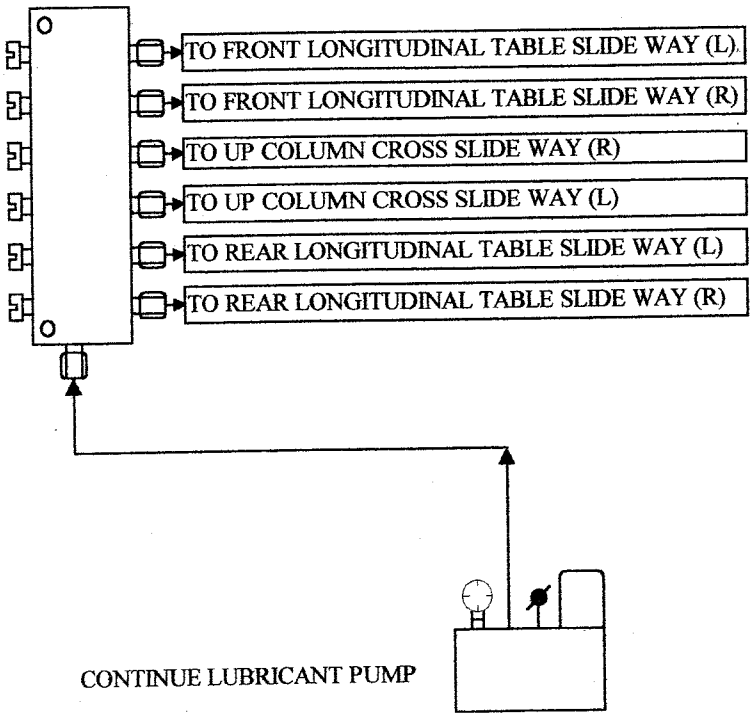
Dismantling:

1. Firmly hold the grinding wheel by one hand, and loosen the fixed nut **clockwise**.
2. Use the dismantling equipment to dismantle it **clockwise** until the grinding wheel set breaks away spindle. Then, you can take down the grinding wheel set.

LUBRICANT INSTRUCTION SYSTEM & DIAGRAM 1/2

2040/2060 SERIES





LUBRICANT INSTRUCTION SYSTEM & DIAGRAM 2/2

Reliability of the machine and economic running are ensured only by the correct choice of lubricant for the individual lubricating points.

(1). Lubricant pump:

1-1. Continue lubricant pump will be cyclically operated, When the hydraulic pump is turned on, and the fluid of the pump is about 500c.c every minute.

1-2. Auto lubricant pump will also be activated when the hydraulic pump is turned on; it is an internal one-shot type lubricant. It pumps 3-6c.c once every ten minutes. (user can chose the lubricant quantity range one of 3, 4, 4, 6 c.c and the factory default is the range of 6 c.c).

(2). Lubricant: SAE30, BP, ESSO, MOBIL or SHELL slide ways oil.
(MOBIL #2 slide ways oil is recommended)

(3). Lubricant tank:

3-1.Continue lubricant pump; 12L(12000 C.C).

3-2.Auto lubricant pump; 1.5L(1500 C.C).

(4). Lubricant points: please see the diagram former page.

(5). Please check the oil quantity of lubricant tank very often, and always keep the tanks full of oil 70% above.

COMMENT FOR HYDRAULIC OIL CHOICE AND USAGE

Hydraulic oil **has to be maintained in adequate viscosity**. More or less viscosity will decrease working efficiency and increase wear of the hydraulic system of machine.

So please use our suggested brand and number of hydraulic oil in order to get best results.

Hydraulic oil will become inferior after use a period of time.

So that it has to be changed regularly to prevent from greasy dirt.

The sediments will cause hydraulic system inconvenient in working ,and even will decrease using life of hydraulic equipment. The normal hydraulic oil is transparent and flavor generally .

Beside periodically change hydraulic oil, in case you find below status, please change oil immediately to protect hydraulic system.

(a). Oil Became darkbrown color and produced odor caused by rapid inferior.

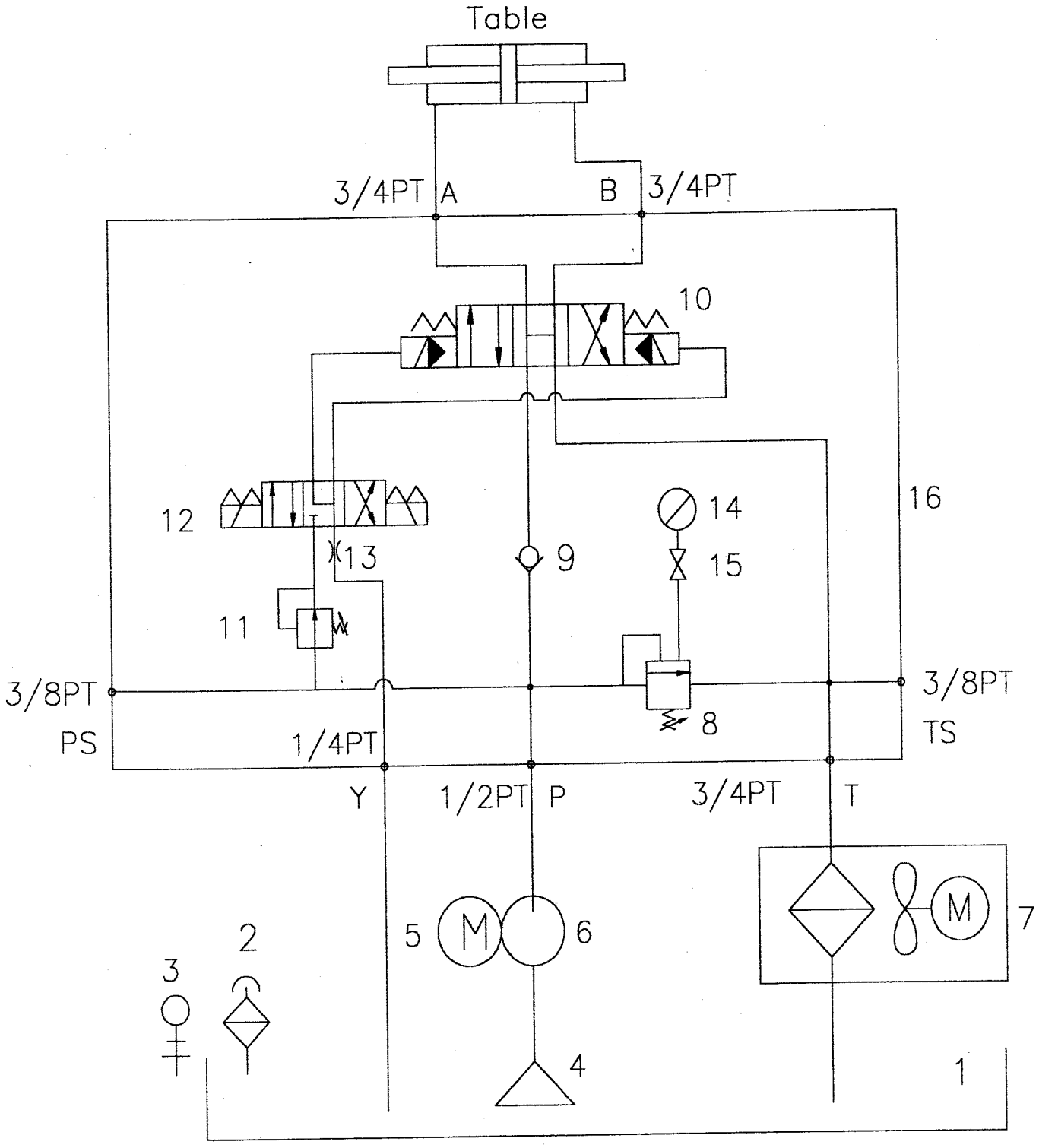
(b). Oil became creamwhite color because of water permeation.

BRAND	KAO-KUANG	BP	ESSO	MOBIL	SHELL
OIL NO.	R-46	ENERGUL HL100 4.5° E/50℃ 33cst/50℃	ESSTIC 50℃ 4.7° E/50℃	D.T.E. Oil Medium 3.93° E/50℃ 28.9cst/50℃	Teilus oil 29 4.0° E/50℃ 29cst/50℃

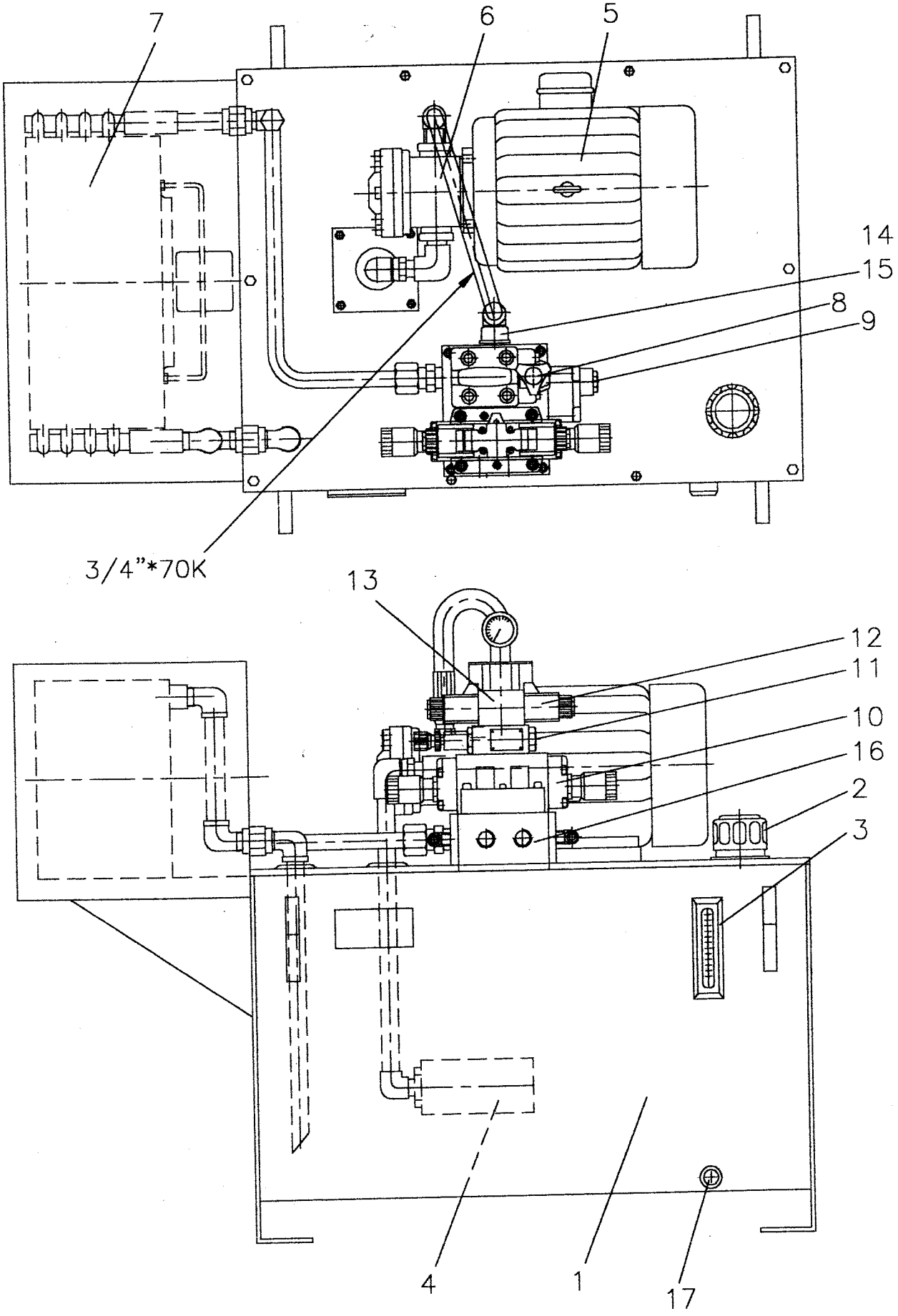
* First time to change of new hydraulic oil is after three months usage; then alter again once every year. (Please compensate the wear away oil anytime in order to maintain a standard capacity of working oil.)
* Hydraulic Pressure of main pump has to be kept between 20--25kg/cm^2 .(remark1)
* The oil capacity of hydraulic tank is approximately 210 ℓ--220 ℓ.

Remark1:Adjust the hydraulic Pressure ;Please refer the Hydraulic tank unit Layout diagram .

Hydraulic System Circuit



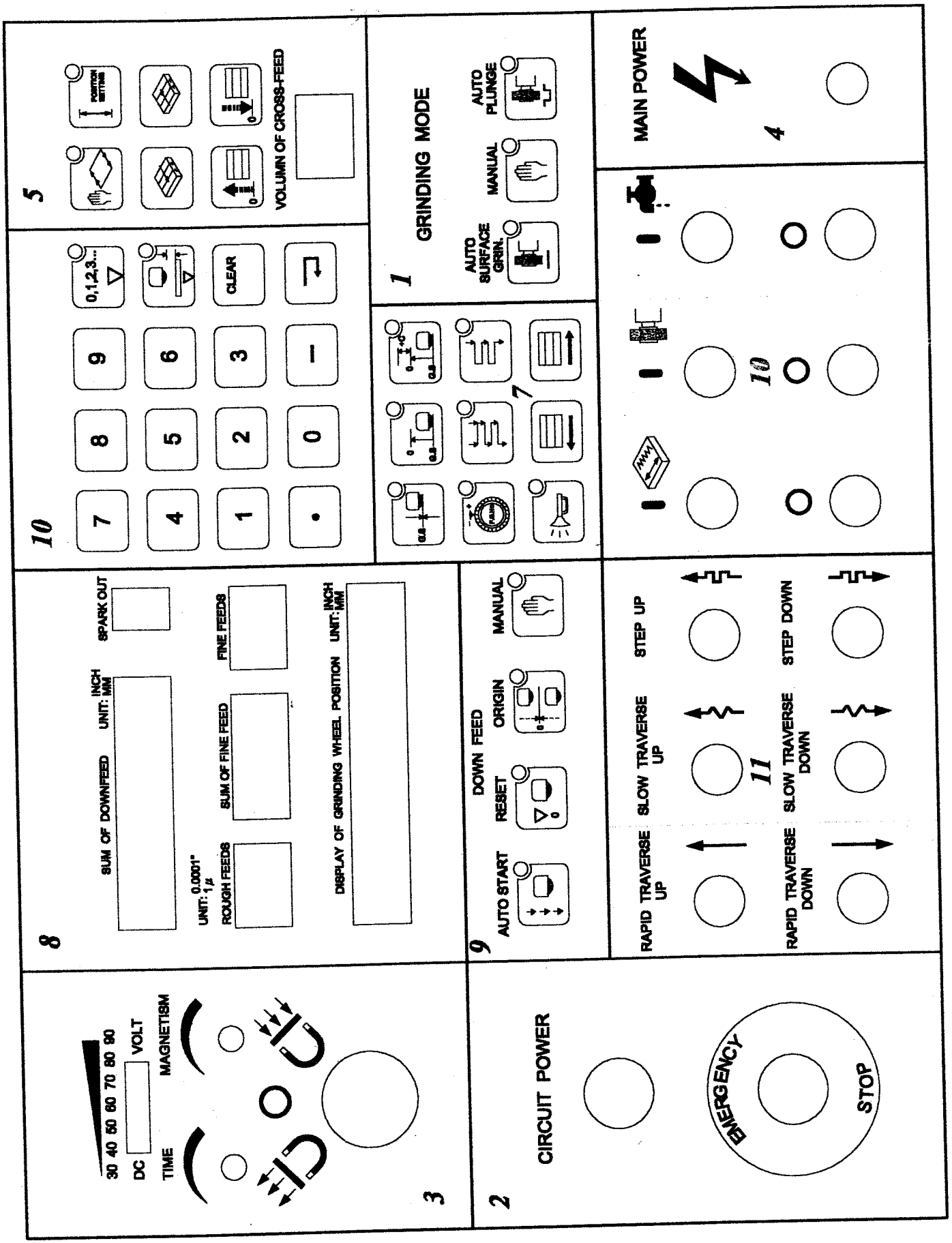
Hydraulic Tank Layout



2040SD SERIES HYDRAULIC SYSTEM PARTS LIST

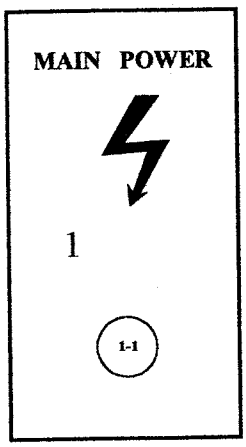
Index No.	Parts Name	Parts Description	Q'ty
1.	Oil Tank	200L	1
2.	Air Breather	HY-08	1
3.	Oil Level Gauge	TS-5"	1
4.	Suction Strainer	MF-10	1
5.	Motor	5HP*4P	1
6.	Vane Pump	50T-26-F-01	1
7.	Air Cooler	EM-268(EM039A)	1
8.	Relief Valve	BG-03-A	1
9.	Check Valve	CRG-03-5	1
10.	Grinder valve	HPD-G04-C31	1
11.	Reducing Valve	MPR-02P1-K-20	1
12.	Solenoid Valve	SWH-G02-C4-A110-10	1
13.	Restrictor	ø1.0	1
14.	Pressure Gauge	2 1/2 "*70K	1
15.	Gauge Cock	NU-02	1
16.	Manifold Block	EM-967(EM036)	1
17.	Oil outlet	1/2"	1

DESCRIPTION OF CONTROL PANEL(CP.)



Section 1:

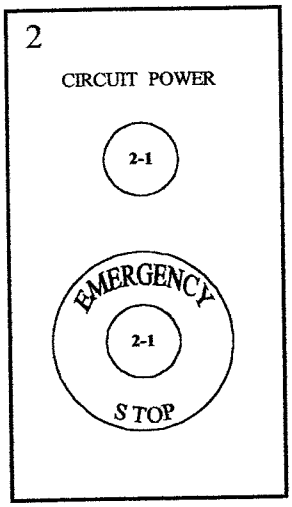
There is 1 indicate lamp in this section, and the function of the lamp is described as below:



1-1 is the indicating lamp of the supply power.

Section 2:

There are 2 push buttons in this section, and the function of the item is described as below:

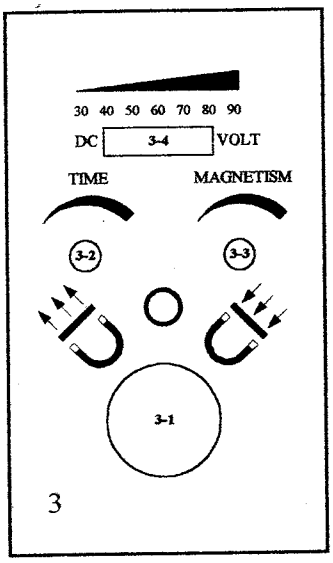


2-1 is a push button with indicate lamp of starting circuit power.

2-2 is a push button of turning circuit power off (also is an emergency stop button).

Section 3:

This is a magnetic chuck control section, and the function of the items is described as below:



3-1 is a select switch of magnetic or demagnetic.(right is magnetic,left is demagnetic and middle is stop.)

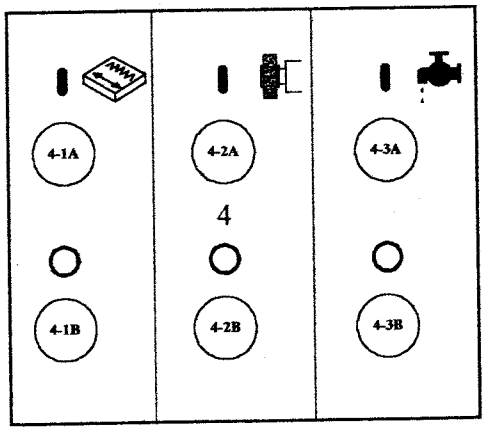
3-2 is a variable resistence of demagnetism time adjusting.

3-3 is a variable resistence of magnetism strength adjusting.

3-4 is a led indicating of magnetism strength .

Section 4:

This is a power unit control section, and the function of the items is described as below:



4-1A is a push button with indicate lamp of starting hydraulic pump unit.

4-1B is a push button of turning hydraulic pump unit off.

4-2A is a push button with indicate lamp of starting spindle motor.

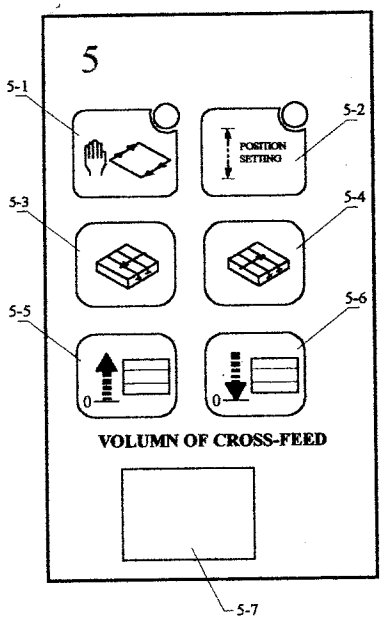
4-2B is a push button of turning spindle motor off.

4-3A is a push button with indicate lamp of starting coolant pump unit.

4-3B is a push button of turning coolant pump unit off.

Section 5:

This is a saddle cross-feed control section, and the function of the items is described as below:



5-1 is a key of manual or auto cross-feed control select.

5-2 is a key of setting stroke of auto cross-feed.

5-3 is a key of moving saddle toward the operator.(on auto mode is a ↙ dir.activate)

5-4 is a key of moving saddle away from the operator.(on auto mode is a ↗ dir. activate)

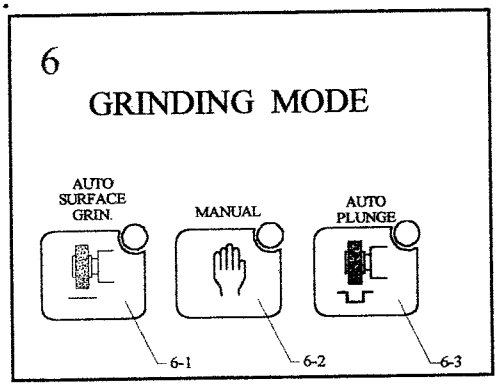
5-5 is a key of increasing length adjusting of auto cross-feed every strike.

5-6 is a key of decreasing length adjusting of auto cross-feed every strike.

5-7 is a led indicating of length of auto cross-feed every strike.

Section 6:

This is a grinding mode select section, and the function of the items is described as below:



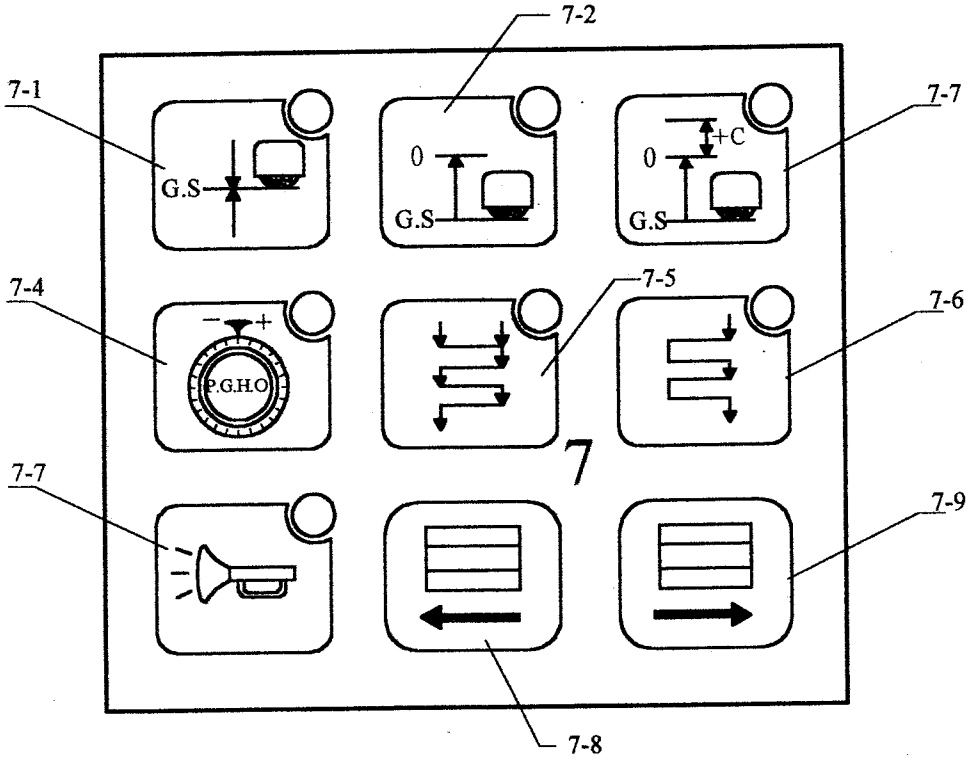
6-1 is a key of auto surface grinding mode selection.

6-1 is a key of manual operation mode selection.

6-1 is a key of auto plunge grinding mode selection.

Section 7:

There are 9 keys in this section, and the function of each key is described as below:



7-1—7-3 these three keys are wheel head retracting mode select keys, when auto start mode circle finished. And the choosing of mode is unique.

The key 7-1  is setting for no retracting mode.

The key 7-2  is setting for retracting to the origin point mode.

The key 7-3  is setting for retracting to the origin point + "C" value mode.

The key 7-4  is enable or disable the function of handy pulser unit.

7-5—7-6 these two keys are one-edge or two-edges auto feed mode for auto surface grinding or auto plunge select keys.

The key 7-5  is setting for two-edges auto feed mode.

The key 7-6  is setting for one-edge auto feed mode.

The key 7-7  is turning the function of horn on or off.

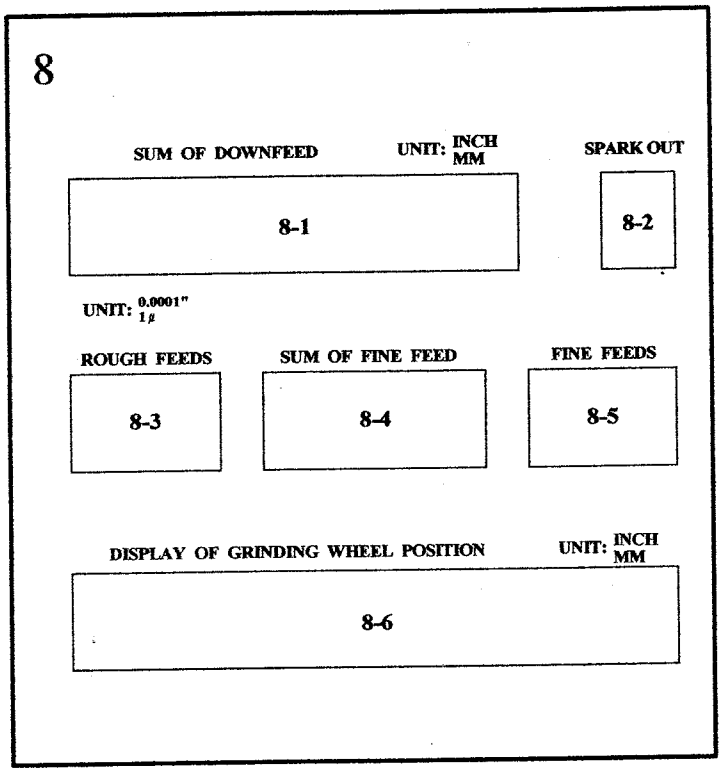
7-8—7-9 these two keys are activating the table longitudinal movement direction and the choosing of mode is unique.

The key 7-8  is activating the table moving direction (forward to← Dir.)

The key 7-9  is activating the table moving direction (forward to→ Dir.)

Section 8:

There are 6 led displays in this section, and the function of each is described as below:



8-1 is a led display of sum of downfeed showing the setting of total downfeed value.

8-2 is a led display of spark out showing the setting of spark-out times.

8-3 is a led display of rough feeds showing the setting of each rough-feed value.

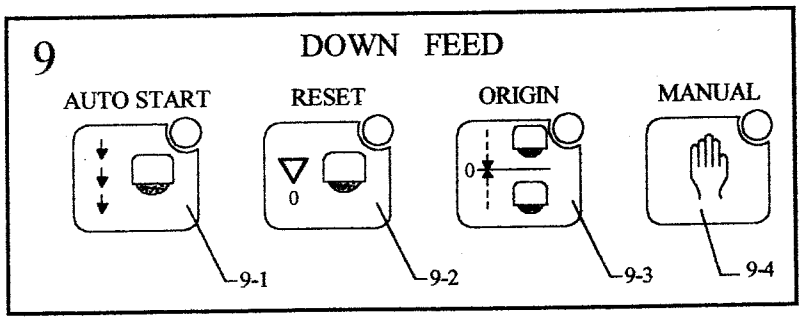
8-4 is a led display of fine feeds showing the setting of sum of fine-feeds value.

8-5 is a led display of fine feeds showing the setting of each fine-feed value.

8-6 is a led display of grinding wheel position showing the wheel reference position.

Section 9:

This is a grinding wheel down-feed control section, and the function of the items is described as below:



9-1 is a key of auto down-feed control mode.

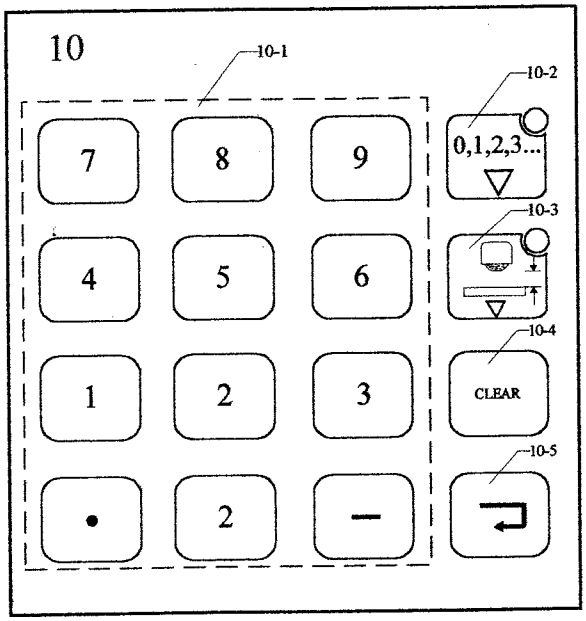
9-2 is a key of setting grinding wheel position to a reference zero position.

9-3 is a key of grinding wheel moving to reference zero position.

9-4 is a key of manual down-feed control mode.

Section 10:

This is a figures input and setting section, and the function of the items is described as below:



10-1 are keys of figures and point that can input numeral dates.

10-2 is a key of dates input activating.

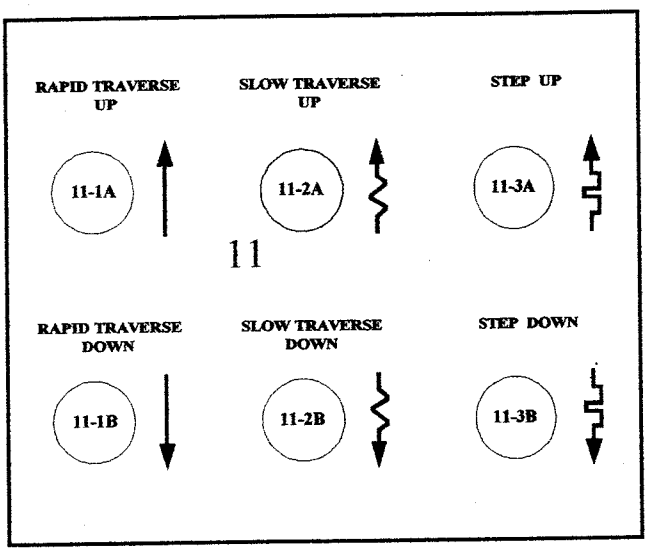
10-3 is a key of quick setting of fine feed.

10-4 is a key of clearing the input dates.

10-5 is a key of making certain the input dates.

Section 11:

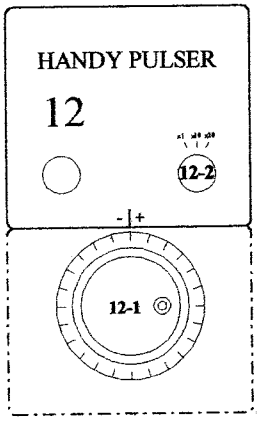
This is a manual down feed control section, and the function of the items is described as below:



11-1A is a push button of driving the wheel head rapid traverse up.
11-1B is a push button of driving the wheel head rapid traverse down.
11-2A is a push button of driving the wheel head slow traverse up.
11-2B is a push button of driving the wheel head slow traverse down.
11-3A is a push button of driving the wheel head step up.
11-3B is a push button of driving the wheel head rapid step down.
(The capacity of each step up or step down is set by 8-5(fine feeds).

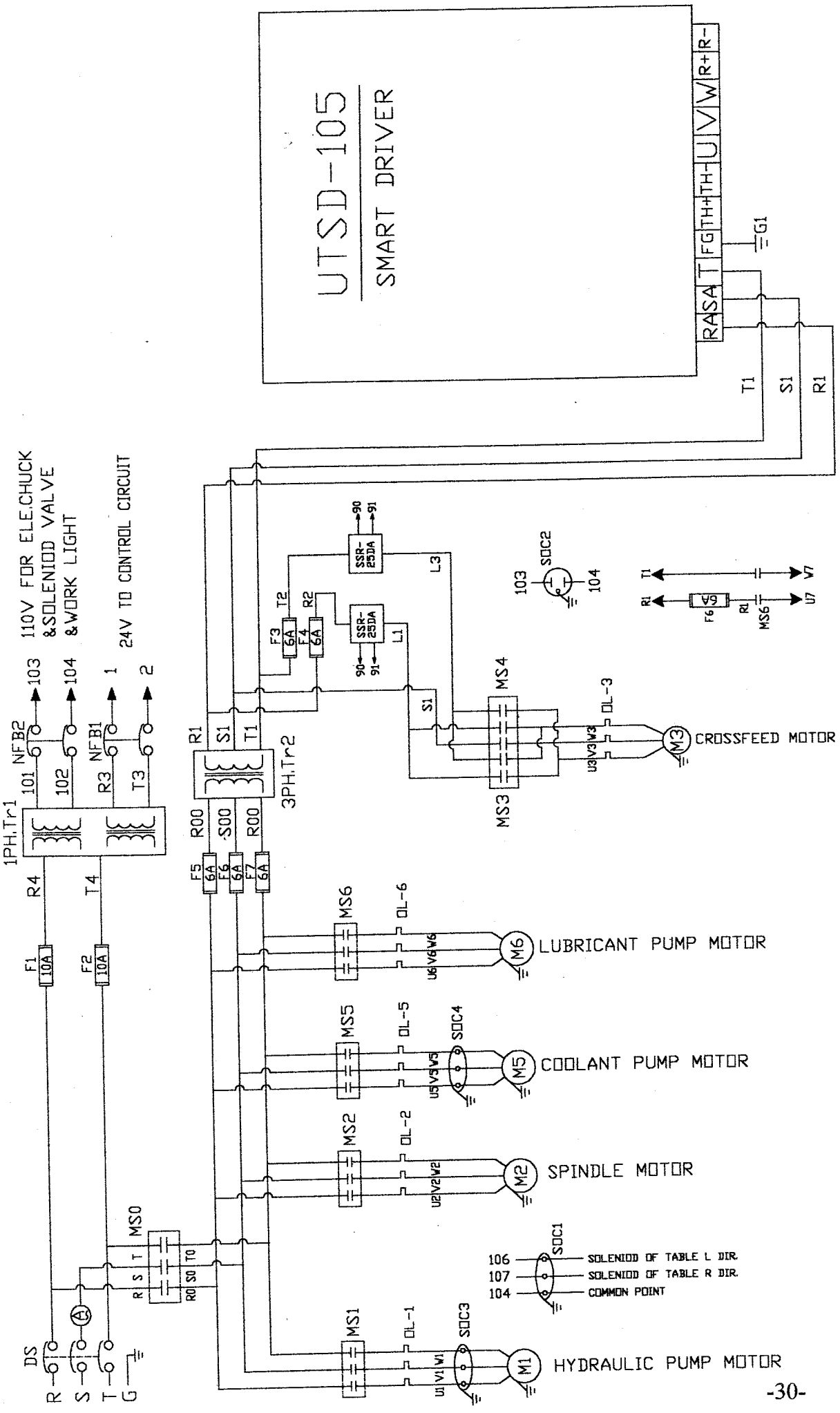
Section 12:

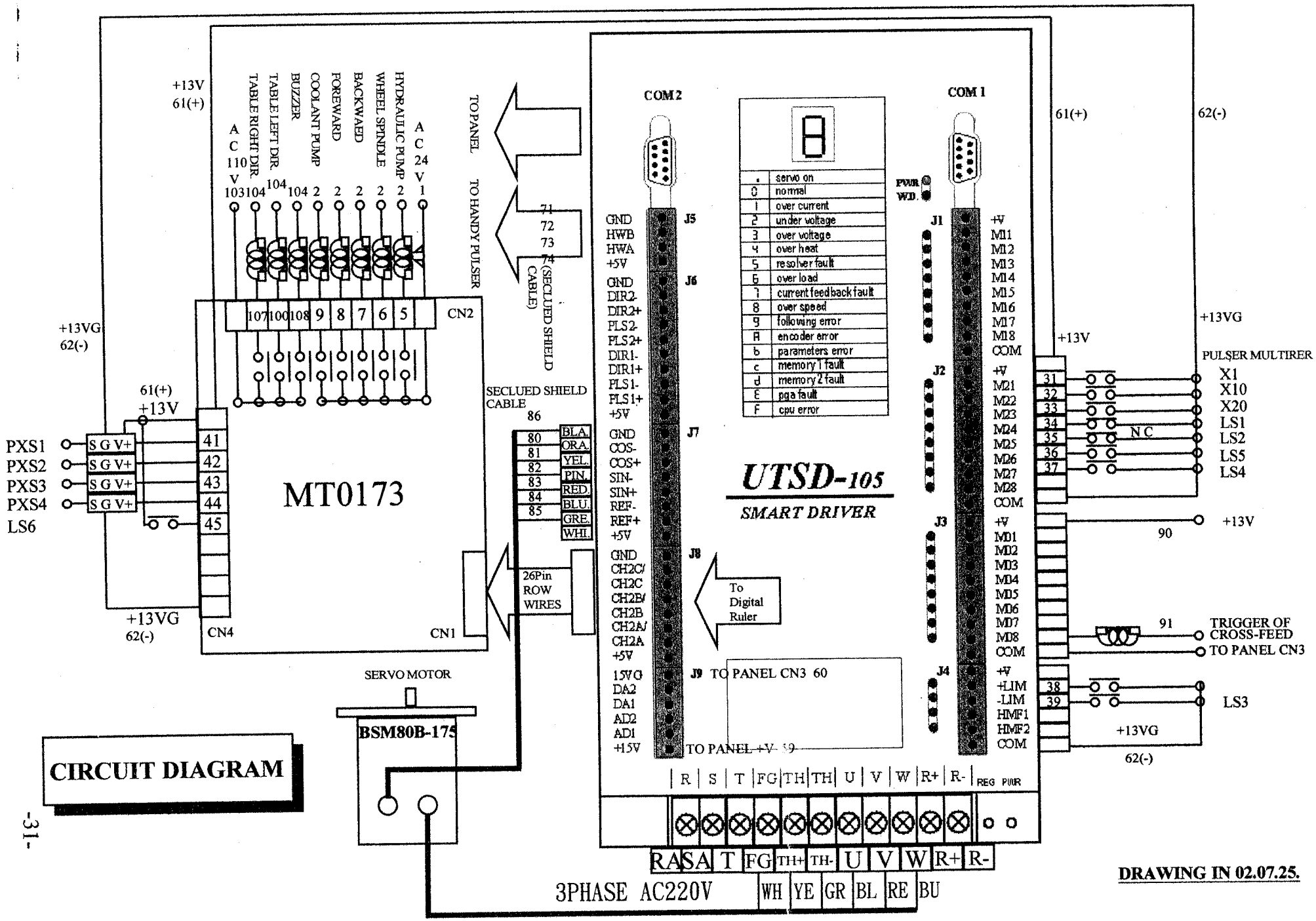
This is a handy pulser unit control section, and the function of the items is described as below:



12-1 is a wheel of pulse generator.
12-2 is a select switch for the multiple range of pulse generator.
(The ranges is unit*1, unit*8, unit*16)

2040/2460 ND MAIN CIRCUIT DIAGRAM

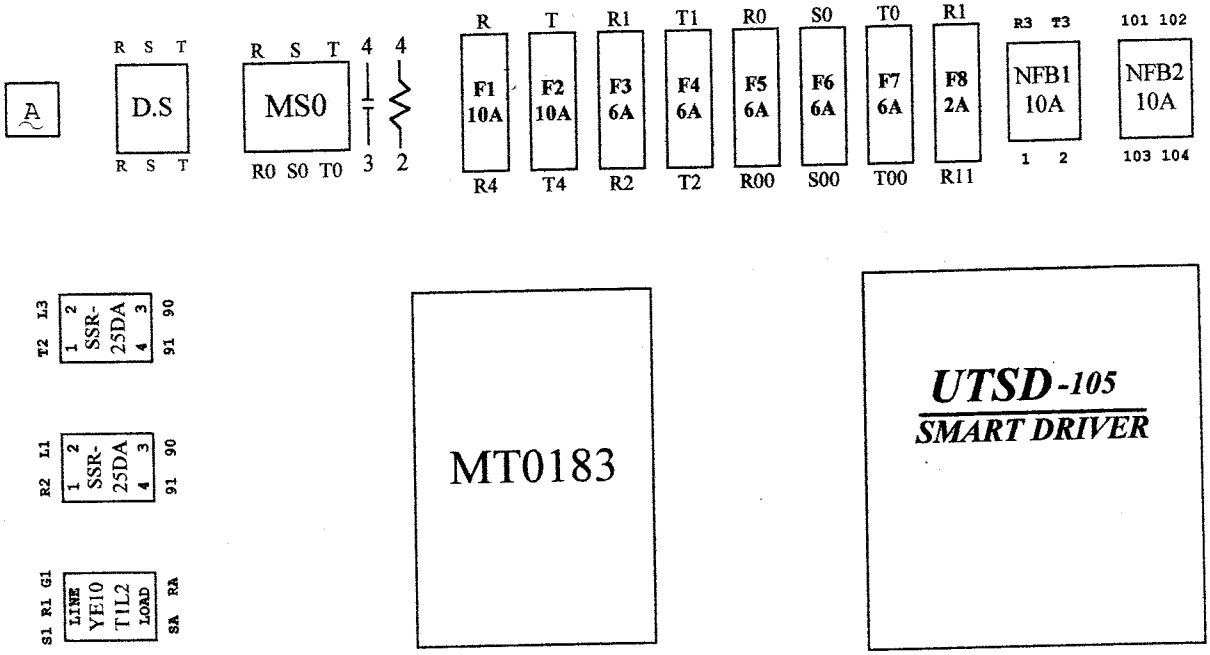


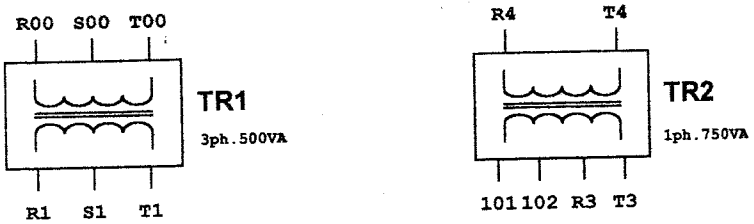


CIRCUIT DIAGRAM

DRAWING IN 02.07.25.

2040ND SERIES LAYOUT OF MAIN ELECTRICAL BOX



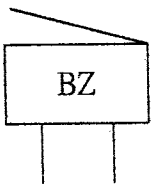


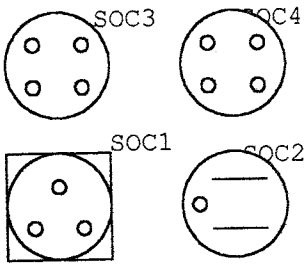
TB1

43	44	45	61	62	59	60	37	62	31	32	33	71	72	73	74			R0	S0	T0		R1	S1	T1			1	2	3	4			103	104	R5	23	24	G	R	S	T	G

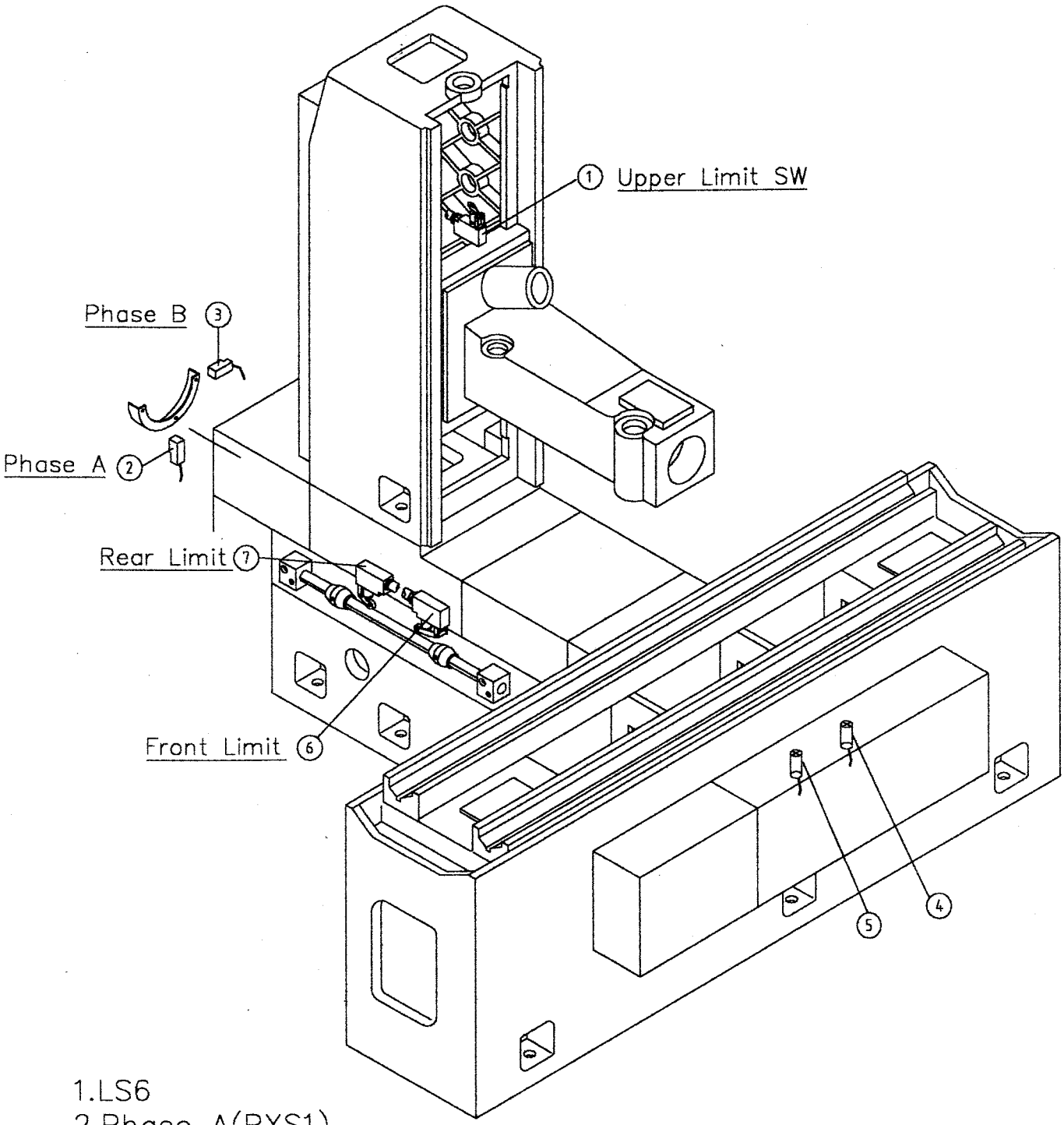
TB2

U2	V2	W2	G	A	B	U4	V4	W4	G1	41	42	61	62	34	35	36	39	62	U7	W7	U3	V3	W3	G	U6	V6	W6	G	U5	V5	W5	G	U1	V1	W1	G	104	106	107	104	108	G	103	104





2040,2060ND Limit Switch(Sensor) Position



1.LS6
2.Phase A(PXS1)
3.Phase B(PXS2)
4.Right Dir.(PXS3)
5.Left Dir.(PXS4)
6.LS4(Front limit)
7.LS5(Rear Limit)

* For Above Code No. Please Refer To Circuit Diagram

ELECTRIC PARTS LIST

(2040ND SERIES)

Index No.	Parts Name.	Description
CP.	Control Panel	Main Control keys and display
UTSD-105.	Smart Driver.	NC. Controller & Sever Motor Driver.
MT0173	Translation Board	Input&Output Board.
BSM80B	Sever Motor	Sever Motor For Downfeed.
MS0.	Magnetic Switch	Magnetic Switch Of Power Source.
MS1	Magnetic Switch	Magnetic Switch Of Hydraulic Pump.
MS2	Magnetic Switch	Magnetic Switch Of Spindle Motor.
MS3&MS4	Magnetic Switch	Magnetic Switch Of Crossfeed Motor (Back&Forth).
MS5	Magnetic Switch	Magnetic Switch Of Coolant Pump & Duster-Suction Motor.
M1	Motor	Hydraulic Pump Motor.
M2	Motor	Spindle Motor.
M3	Motor	Crossfeed Motor (Back&Forth).
M5	Motor	Coolant Pump & Duster-Suction Motor.
D.S.	Safety Breaker	Saferty Breaker Of Main Power
NFB1.	No-Fuse Breaker	No Fuse Breaker Of Circuit Control System(24V)
NFB2.	No-Fuse Breaker	No Fuse Breaker Of Soleniod Valve & Electric Chuck(110V)
F1,F2.	Fuse	Fuse For Protecting Control Circuit.
F3,F4.	Fuse	Fuse For Protecting SSR-25DA Unit.
F5,F6,F7.	Fuse	Fuse For Protecting 3Ph Transformer.
A.	Current Meter	Amperemeter Of Circuit.
SOC1.	Socket	Socket Of Solenoid Valve For Table Dir.Control.
SOC2.	Socket	Socket Of Work-Light.
SOC3.	Socket	Socket Of Hydraulic Pump.
SOC4.	Socket	Socket Of Coolant Pump & Duster-Suction Motor
1PH TR.	1Ph Transformer	Transformer For Cicurit Control System
3PH TR.	3Ph Transformer	Transformer For Crossfeed & Rapid Up And Down Motor
TB1,TB2.	Terminal Board	Terminal Board Of Wires Connect
OL1...OL5.	Over Load Relay	Motor Over Load Protect Relay
SSR-25DA.	Crossfeed Controller	Crossfeed (manual & auto) Control Unit
LS1...LS6.	Limit Switch	For Circuit Controling Limit Switches
PXS1..... PXS4.	Approximately Switch	For Auto Cross-feed stroke setting & Table Dir. Change (also a Trigger Signal of Auto Cross-Feed or Plunge).
BZ	Buzzer	For Reminding Of The Auto Circle has been finished.

OPERATION OF MACHINE

When made preparations for the operation machine.then you can get ready to operate machine and to be familiar with operation skills and get the best working condition by following procedures as description as below :

A.reconfirming the following notices

a-1. The machine must be located on the vibration-proof ground.
a-2. Leveling of the machine.
a-3. Lubrication the slide ways & screws with slide way lubricate oil at first time use.
a-4. The Power supply must be adapted to the machine's specification.
a-5. Before starting the spindle motor, please do not install the wheel until you ensure it rotates at clockwise direction.
a-6. Do not install the wheel until you have already balanced it.
a-7. Be sure the flow control leveler at stop position.
a-8. Be sure the machine moving parts area is clearance.

B.Table longitudinal movement

b-1. Pressing the push button 2-1 to start control circuit.
b-2. Adjusting the travel stroke adjuster(L&R) at fit position.
b-3. Starting the hydraulic pump motor (press the push button 4-1A).
b-4. Pressing the Key of 7-8 or 7-9 once to activate the table moving dirction.(7-8 is forward to←DIR. 7-9 is forward to →DIR.)
b-5. Turn the flow control leveler at clockwise dir. slowly. till the table moving speed is suited for your wanted. then table will move reciprocating between the L&R travel stroke adjuster.
b-6. When table is moving , user can change the speed variable by turning the flow control leveler.clockwise dir. speed is getting up, on the contrary, is getting down.
b-7. You can pause the table movement , by pressing the 4-1A once (then the indicate lamp within 4-1A will be flashed with 1 sec. frequency).and restart the table movement by Pressing the push button 4-1A again.
b-8. When table on pause condition , by pressing the key 7-8 or 7-9 intermittent, to make the table forward to ←DIR. or → DIR.moving intermittent.(the speed of table movement is setting by flow control leveler)

C. Saddle cross-feed movement

c-1.Manual rapid cross travel operation:
1. Make sure the key of 5-1 on manual mode(when the indicate led is not lightened)
2.Pressing the key of 5-3 make the saddle to↙ DIR. rapid movement till it reaches the position that you want , than release the key.
3.Pressing the key of 5-4 make the saddle to ↗DIR. rapid movement till it reaches the position that you want , than release the key.

c-2.Auto cross-feed operation:

1. Pressing the key of 5-1 once, change to auto-crossfeed mode (then the indicate led is going to light up).
2. Setting the cross travel stroke of up-column(See the description on next page)
3. Pressing the key of 5-3 or 5-4 once to activate the saddle to ↙ DIR. or ↗DIR. auto cross-feed.
4. Adjusting the volume of auto cross-feed to fit your need.(key of 5-5 is increase, 5-6 is decrease the every intermittent feed volume.)
5. Chioce the auto crossfeed mode of key of 7-5 or 7-6 , 7-5 for two-edges auto feed mode, 7-6 for one-edges auto feed mode.
6. Operate proceeding of auto cross-feed stroking system

(a).At first , make sure the key of 5-1 is on manual feed mode.
After that,pressing the key of 5-3 or 5-4(for rapid forward or backward). to sent the saddle to the first grinding edge of workpiece "A".
(please refer FIG.1 below)

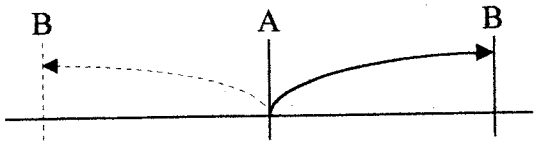


FIG.1

After the above procedures,pressing the key of 5-2 (position setting key with condition LED indicator) once, Then LED indicator will be flashed with 1 second frequence.and operation the keyof of 5-3 or 5-4 to sent the spindle seat to the second edge of workpiece "B".
Then one more pressing the key of 5-2 , and the LED indicator is going to stop flashing and keep lighting, till the key of 5-1 changeover to auto mode.
when the LED indicator of 5-2 turn off, the procedure is completed.

(b). If the setting is not correct; for instance: setting "A"&"B" two points almost close together, or only just setting one point "A".then pressing the key of 5-1 to the auto mode(LED light up).
this moment the LED indicator of 5-1 will be quickly flashed with 0.1 second frequency. It means the setting is mistake, please resetting again.

(c).This system has auto memory fuction ; when the machine is operation and power is failure suddenly or the emergency stop switch is pushed to interrupt operation.
unless the user turn the cross-feed leadscrew manually before restarting the power supply. otherwise the previous setting won't be changed.

D.Servo controller system (for down-feed) operation:

When the control circuit power on ,the LED display of 8-1,8-2,8-3,8-4,8-5and 8-6 & indicator of manual operation will be lighted up.at same time.
then the figures of 8-6 will display "0".and the others will display the figures that have been set in last time,then the manual down-feed system is ready to operate.

d-1. Manual down-feed operation

1.Pressing the key of 6-2 once, to activate manual down-feed operation mode.

2.The LED display of 8-6 is showing a reference position of wheel-head (relative to reference zero point).whenever the system power on, the first time showing is a reference zero point.

3.When manual down-feed system is on operation,anytime, you can press the push-button 9-2 once to reset the reference position of wheel-head to a new reference zero point.(so before you press the key, you must confirm that is really your ask of new reference zero point).

4.Whenever the reference position of wheel-head is not on reference zero point. then, anytime, you can press the key of 9-3 once(must lasting over 1 sec.), to set the wheel-head return to it's original position (reference zero point). (It may cause a little hazard, so please take more cares of operation this key).

5.When the function of "original position return" is activating; then,You can interrupt the function at once, by pressing the key of 9-4 one stroke.

6.Pressing the 11-1A persisted to travel the wheel head rapid traverse up till it reaches the position that you want.

7.Pressing the 11-2B persisted to travel the wheel head rapid traverse down till it reaches to the position that you want.

8.Pressing the 11-2A persisted to travel the wheel head slow traverse up till it reaches the position that you want.

9.Pressing the 11-2B persisted to travel the wheel head slow traverse down till it reaches to the position that you want.

10.Pressing the 11-3A one stroke to travel the wheel head one step up.

11.Pressing the 11-3B one stroke to travel the wheel head one step down.
REM.1:the capacity of step up or step down is set by key of 8-5.

d-3.Auto down-feed circle operation

d-3a..Surface grinding mode:

1.Pressing the key of 6-1 once to turn the operation mode in auto surface grinding mode (the indicating LED will light up).

2.Pressing the key of 10-2 once (the indicating LED will light up). to start the numeric dates input of sum of downfeed,spark out, rough feeds, sum of fine feed , fine feeds , and the value C+ of key of 7-7 ; when you activate this function , at first the LED display of 8-1 will become flashing to wait for the dates input,then you can key in the figures in the keys of 10-1,after the dates have been keyed already,then press the enter key(10-5) to make certain, or press the key of 10-4 to clear the dates and rekeyin again, or press the 10-5 to skip to next step.the numeric dates input sequence is sum of downfeed, rough feeds, sum of fine feed, fine feed, and spark out times, and the value of C+.

2-1.Unless user have complete finished the input sequence circle ,otherwise the indicating LED won't go off (it means user can't do other procedure).

2-2.The key of 10-3 is a key that function just like the key of 10-2, but it is a quick setting only for fine feed.

3.Do the procedures of c-2(auto cross-feed operation).

4.Choice the wheel head retract mode after auto feed circle finishing ; key of 7-1 is no retracting, key of 7-2 is retracting to origin point, key of 7-2 is retracting to origin point + C value, the indicator of chosen mode will light up.

5.Choice the function of horn on or off (if choice is "on" mode,then it will sound up,when the auto-down feed circle have finished,but user can close the sound by pressing the key of 7-7 one more times)

6.Pressing the 9-1(AUTO START) one stroke to start the auto down-feed circle. (Then indicator of 9-1 will light up And indicator of 9-4 will go out).

7.When the auto down-feed circle finished,then the wheel head will rise (it depend on the mode as described on item 4).and the control system will be changed to the condition of manual down-feed operation.

d-3b.Plunge grinding mode:

1.Pressing the key of 6-3 once to turn the operation mode in auto plunge grinding mode.(the indicating LED will light up).

2.Do the procedures of d-3b item 2-7(but the item 3 auto-cross function will be disabled.)

d-4.Handy pulse unit operation:

1.The grinding mode must be set on 6-2 manual mode (then the function of manual down-feed operation & auto down-feed circle operation will be disabled.).

2.Press the key of 7-4 to enable the function of Handy pulse unit.

2.Switching the select switch 12-2 at right range (x1or x8 or x16) (per graduation capacity = selected numerical * unit)

3.Turn the 12-1(pulse wheel) clockwise to drive wheel-head down feed.

4.Turn the 12-1(pulse wheel) anti-clockwise to drive wheel-head up feed.

5.Do not operate the pulse wheel too fast.

REM2:The spindle motor is interlocked with mag.chuck controller&wheel guard cover.so that unless user switching the mag.chuck on magnetism and locking the wheel guard cover well, otherwise user can not start the spindle motor.

REM3:The auto down-feed trigger signal is also on the ends of auto cross-feed stroke .(only for surface grinding mode).

REM4:The auto down-feed trigger signal is on the right end of table movement stroke.(only for plunge grinding mode).

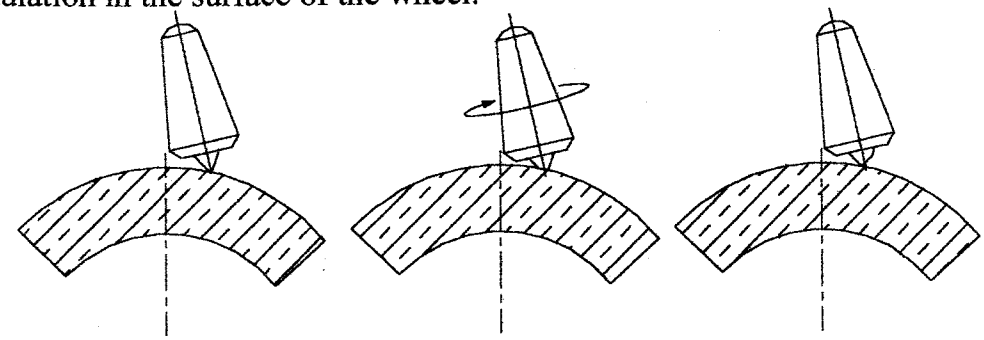
GENERAL GRINDING BUGS AND ELIMINATION

Bugs Style	Reason(s)	Corrective method(s)
Vibrative Waves	a.Vibration. b.Grinding wheel loses its Round. c.Grinding wheel is too hard.	a.Keep machine in best condition and balance the grinding wheel certainly. b.Use sharp diamond dresser to dress. the grinding wheel surface again. c.Increase working table speed and fix with right grinding wheel.
Burn on grinding surface of processed material.	a.Caused by too hard or tiny grained grinding wheel. b.Grinding wheel is too blunt or coated with dusts. c.Caused by large downfeed capacity. d.Caused by shortage of coolant water.	a.Fix with softer or rougher grained grinding wheel,or decreased line speed of grinding wheel. b.Dress grinding wheel ,until it's surface become sharp. c.Decrease downfeed & crossfeed capacity. d.Increase the discharge of coolant water. Use stronger coolant effect mixture.
Workpiece lost parallel.	a.Bad on magnetic chuck surface. b.Precision of magnetic chuck surface is not good enough. c.Workpiece in rough machining be twisted or bent too large.	a.Use tinygrained grinding stone or oiled stone to polish the contact surface between magnetic chuck and workpiece. b.Regrind magnetic chuck surface. c.Grind the workpiece double sides for several times(3-4 times).
Rough on glossy surface.	a.Wheel dressing too rough. b.Caused by too big feed capacity in the final process.	a.Lightly dress by one or two times sparklingly dressing. b.Tiny feed and polish surface.
Loading of grinding wheel.	a.Grinding wheel is not fitted. b.Inadequate coolant liquor. c.Working table speed is too slow. d.Uncertainly dress of grinding wheel.	a.Use correct wheel specification. b.Replacing right and clean coolat liquor. c.Increasing working table speed. d.Use sharp diamond dresser to get rough grain grinding wheel.

USE OF THE OPTIONAL ATTACHMENT

1.Parallel Dressing attachment (Standard Accessory)

The wheel can be dressed either by diamond tool on he chuck or on the parallel dressing attachment, which mounted, on spindle seat. The diamond tool is arranged at an angle to the centerline of wheel as shown on Fig below, so that when the diamond loses its keenness it can be turned an angle, ensuring that there is always a sharp diamond edge available, The dressing method and points are same as "Dressing the wheel". Experience has shown that, with highly accurate grinding, dressing with the diamond, which mounted on the magnetic chuck, is better than which on the spindle seat (the former is more stable than latter) as the latter condition will cause slight undulation in the surface of the wheel.



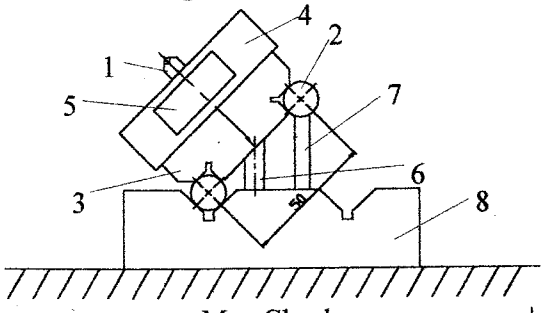
2.Angle forming attachment

a. Let the attachment be attracted to the magnetic chuck, keeping a 90° right angle between the attachment and wheel. The magnetic chuck should be kept level.

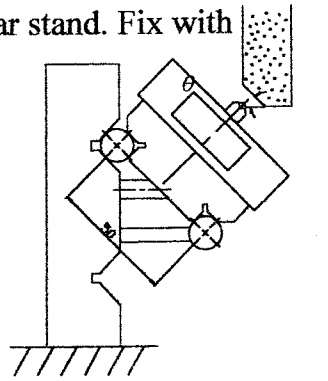
b. The value in question will be the Sine of the angle times 50. that is $B = \text{Sin}\,\theta \times 50$.

c. Get a Block gauge the thickness of which equals that of B (or more one) ◦

d. Put this block gauge under the base of the Sine bar stand. Fix with The fastening bolts and the forming are done.

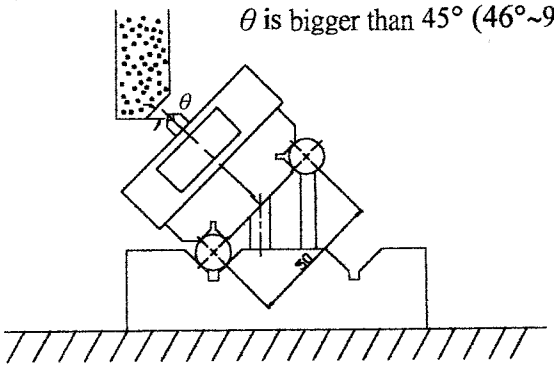


Mag.Chuck



θ is bigger than 45° (46°~90°)

1. Diamond tool.
2. Mandrel
3. Slide base
4. Sine Bar stand
5. Handle
6. Adjustment bolt
7. Block gauge



θ is smaller than 45° (0°~ 45°)

8. Build-in base

e. Degree and block gauge thickness conversion table

Degree	Sin.	Block gauge thickness	Degree	Sin.	Block gauge thickness
1°	0.0175	0.875	24°	0.4067	20.335
2°	0.0349	1.745	25°	0.4226	21.130
3°	0.0523	2.615	26°	0.4384	21.920
4°	0.0698	3.490	27°	0.4540	22.700
5°	0.0872	4.360	28°	0.4695	23.475
6°	0.1045	5.225	29°	0.4848	24.240
7°	0.1219	6.095	30°	0.5000	25.000
8°	0.1392	6.960	31°	0.5150	25.750
9°	0.1564	7.820	32°	0.5299	26.495
10°	0.1736	8.680	33°	0.5446	27.230
11°	0.1908	9.540	34°	0.5592	27.960
12°	0.2079	10.395	35°	0.5736	28.680
13°	0.2250	11.250	36°	0.5878	29.390
14°	0.2419	12.095	37°	0.6018	30.090
15°	0.2588	12.940	38°	0.6157	30.785
16°	0.2756	13.780	39°	0.6293	31.465
17°	0.2924	14.620	40°	0.6428	32.140
18°	0.3090	15.450	41°	0.6561	32.805
19°	0.3256	16.280	42°	0.6691	33.455
20°	0.3420	17.100	43°	0.6820	34.100
21°	0.3584	17.920	44°	0.6947	34.735
22°	0.3746	0.3746	45°	0.7071	35.355
23°	0.3907	0.3907			

3.Sine bar

The Sine bar is used to chuck the inclined angle of the magnetic chuck, when the angle forming surface is large.

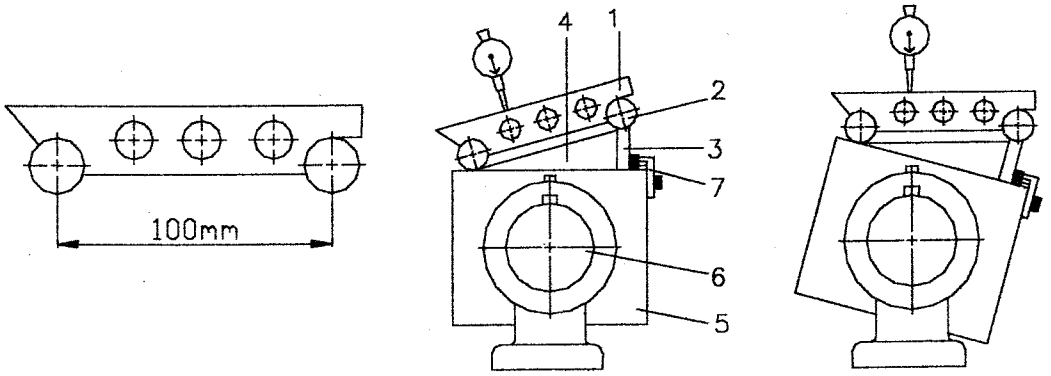
(1) The value in question will be the Sine of the angle times 100. that is $B = \sin\theta \times 100$.

(2) Get a block gauge the thickness of which equals that of B。

(3) Put this gauge at one end of the Sine Bar and let it be attached to the inclinable magnetic chuck. This Sine Bar shall be kept parallel to the longitudinal. Direction of the machine.

(4) Press the Dial Gauge against the surface of the Sine Bar and meanwhile turn the cross feed hand wheel, so that the saddle moves back and forth for the checking of the accuracy of the angle of the magnetic chuck.

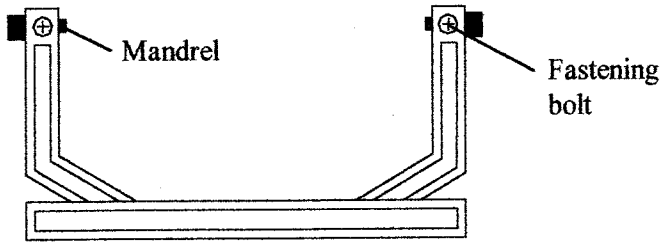
1. Sine Bar
2. Mandrel
3. Block Gauge
4. Application of the trigonometry
5. Inclincalb Magnetic Chuck.
6. Mandrel of the Magnetic chuck.
7. Stop block



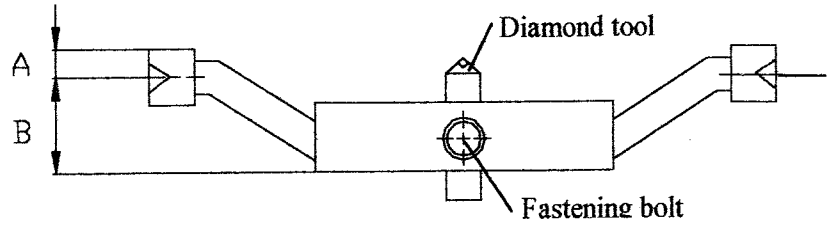
4.Radius Forming Attachment

The Radius Forming Attachment is composed of a main stand, several swing rods and a diamond tool.

(1) Main Stand



(2) Swing rod and diamond tool



Nameplate is attached to the swing rod with A and B to mean:

A : the distance between the upper rim and the center。

B：the distance between the bottom rim and the center。

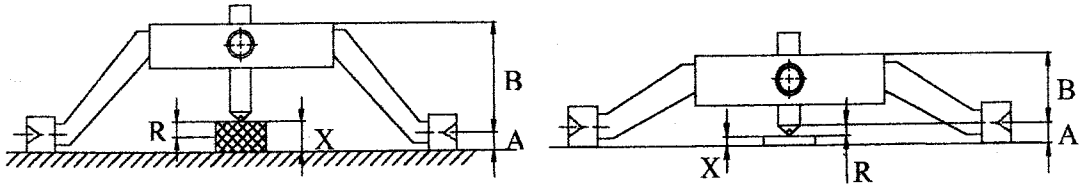
The R forming is the adjustment of the distance between the diamond tool and the swing rod center so that the R shaping results。

(3) To determine the concave and convex R：

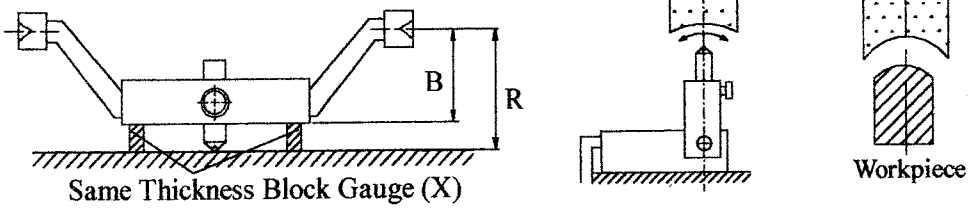
a. If the tool is parallel to center line, then R=0。

b. To determine the convex R: Put the swing rod on a place disk. Put a block gauge of proper thickness under the diamond tool. Then R=X－A

c. To determine the small concave R:



d. To determine the big concave：R= B＋X



e. Note：

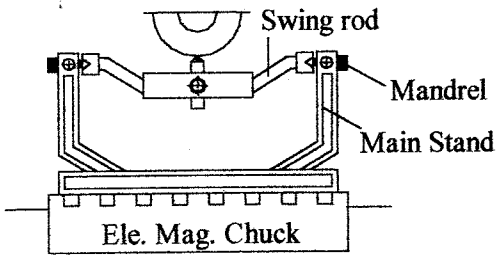
1.The base and side of the grinding wheel shall be well-dressed。

2.The Radius Forming attachment shall be parallel to the grinding wheel。

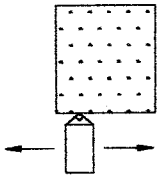
3.The Diamond tool shall be parallel to the Radius Forming Attachment。

(4) Operation of Radius Forming Attachment：

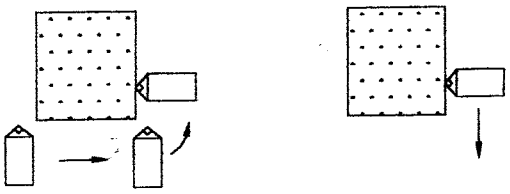
a. Find the center of the wheel , then fix the work table。



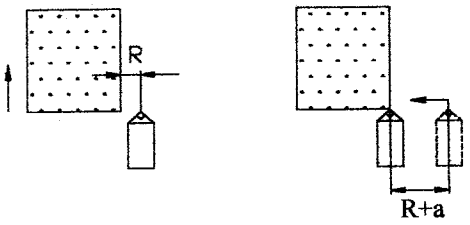
b. Turn the down-feed handwheel at 1/3 on the width of the wheel so that the wheel cuts into 0.02mm of the diamond tool. Then turn the cross feed handwheel to dress the grinding wheel, and turn the calibration reading on the down feed back to zero.



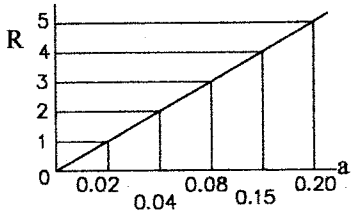
c.Turn the diamond over 90°，and elevate it into a proper position (greater than the R size in question)



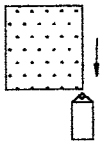
d. Elevate the grinding wheel so that it goes away from the diamond tool and the wheel in such a position that the distance between the side of the wheel and center of the diamond tool is just R.



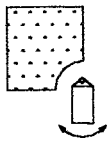
e. Move the diamond tool (R+a) leftward, with a found in the following table.



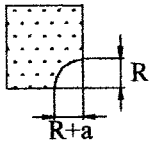
f. Turn the downfeed handwheel so that the wheel approaches the diamond tool.



g. Turn the swing rods 90° each time, inching 0.05mm, till the R is determined.



h. The wheel finally becomes the following shape.



5.Coolant System

Insert the power source plug in socket (At the rear side of electric box) , Then Switching the select switch to start the coolant pump , the pump should rotates in clockwise direction. Then adjust coolant flow by turning the ball valve to suitable rate.

＊Coolant Tank Capacity : 120 ℓ (Liter)

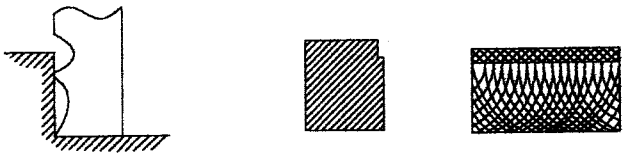
＊Coolant Pump : 1/8HP×2P

6.Common cases in side grinding

(1)

In the case shown in the figure above, the side-grinding wheel and the work have a smaller contact surface, in which case efficiency is higher, and the surface roughness is better

(2)



In the figure above, the wheel and the work have two sections of contact, and the Surface Of grinding is bad. The surface has to be corrected into the shape shown in (1)

(3)

The wheel did not cut to "relief angle", thus it contacts the whole face of the work,causing, the surface of processing rough and rugged. Also, the greater face of contact will cause burns and cracks.

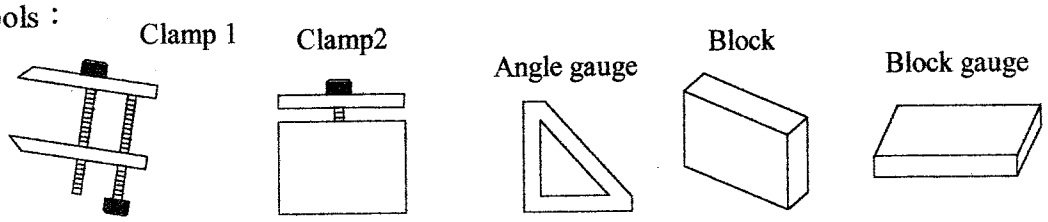
(4)

The "Relief angle" of the wheel is lower than the surface of the work, so that the work face becomes two sections, the upper section resembling that in (3) and the lower Section in (1). Now it is necessary to enlarge the "Relief angle" part so that it will higher than the face of the work.

(5) If the spindle does not constitute a right angle with the work table surface, the side faces will turn out to be as shown below:

7.Right Angle Grinding

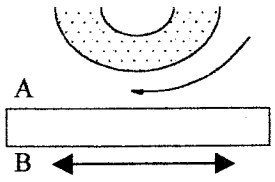
(1) Tools :

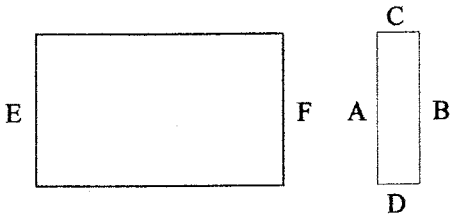


(2) Use of jigs and tools to do the grinding of block of six faces A,B,C,D,E.F。
for example；

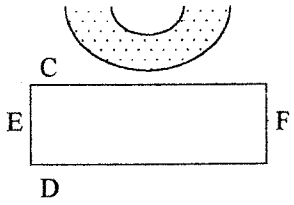
a.The workpiece under 200mm：

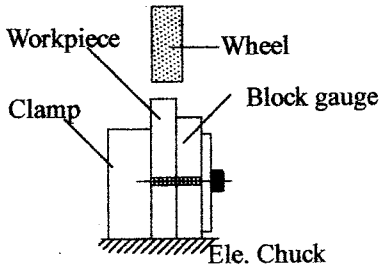
＊ Grinding of first basic face, or the grinding of A and B。



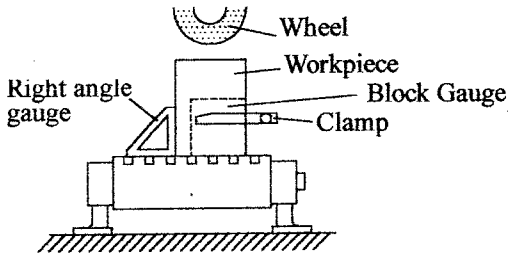


＊ Grinding Of C and D。





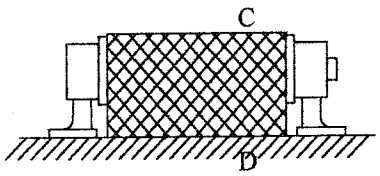
＊ Then grinding Of E and F。



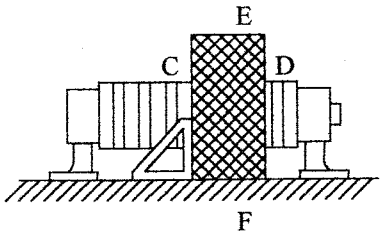
b. The workpiece over 200mm ：

＊ Grinding of the first basic face or A。

＊ Grinding of C and D: turn the inclinable magnetic chuck into 90°。



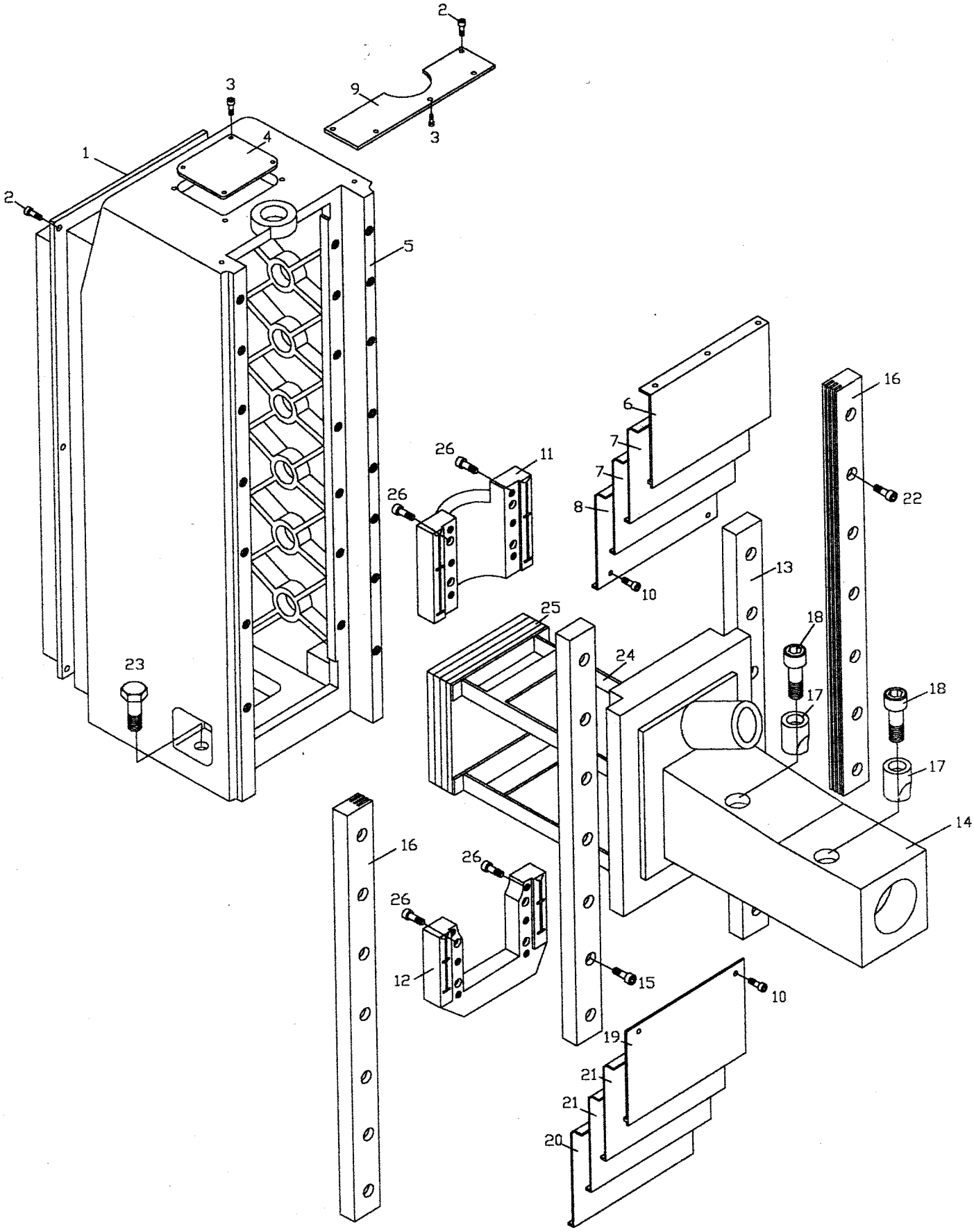
＊ Grinding of E and F。



(3).Precaution : The grinding of right angle depends on the patience and clever mindedness of operator for its precision. For instance, whether the burrs after grinding is done well, whether the tools are kept clean, whether the worktable are kept clean, the accuracy of the angle gauge, etc. all will have a direct influence over the precision of the product.

Complete Knockdown Drawing & Parts List

UP COLUMN ASS'Y

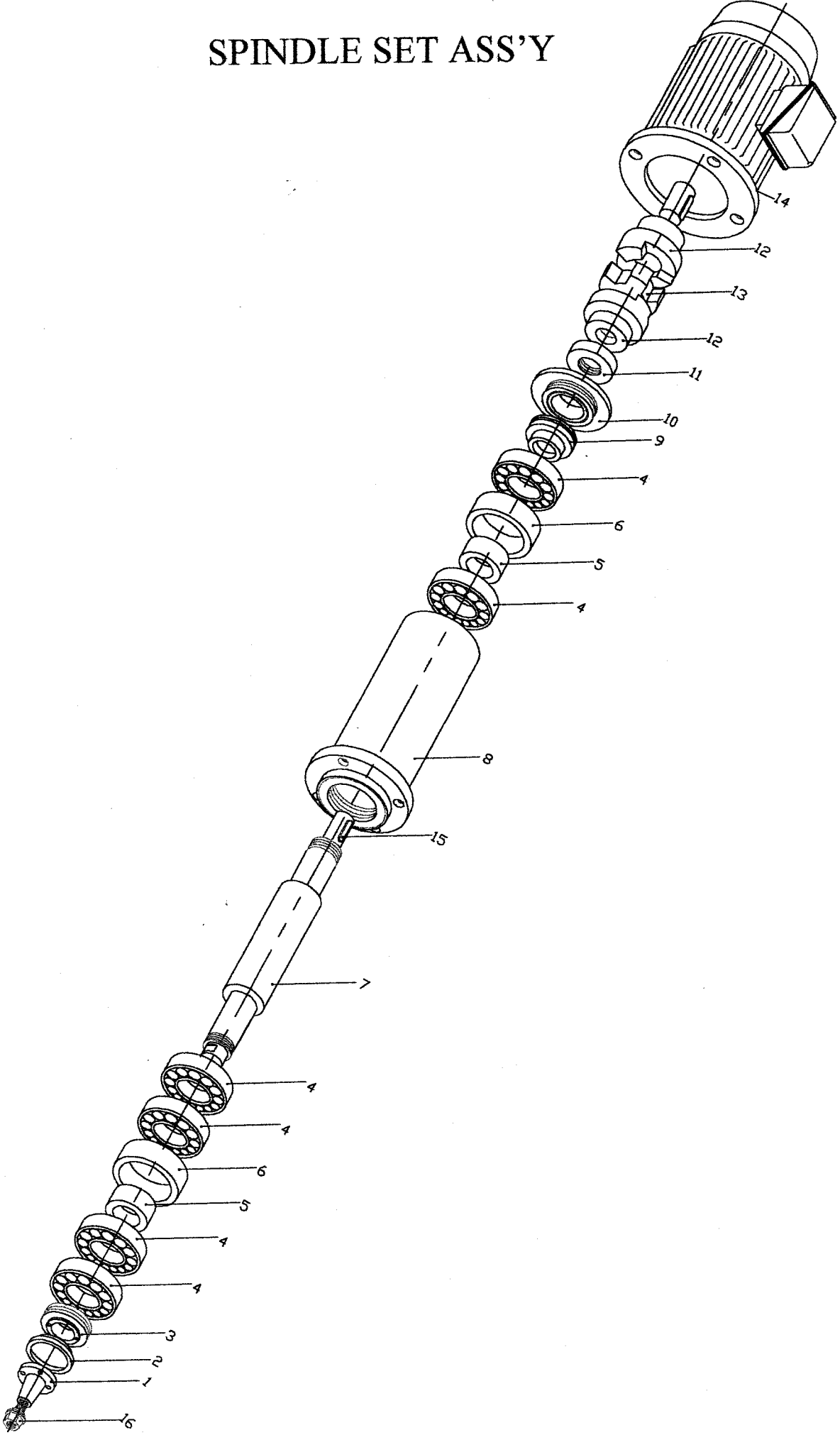


UP COLUMN ASS'Y

(2040,2060SERIES)

Index No.	Parts No.	Parts Name	Q'ty
1.	2040-303A	Column Rear Cover	1
2.	W 1/4"*3/4" L	Round Head Screw	8
3.	W 3/16"*3/4" L	Round Head Screw	7
4.	2040-304	Column Upper Cover	1
5.	2040-201	Column	1
6.	2040-306	Dust Shield	1
7.	2040-307	Dust Shield	2
8.	2040-308	Dust Shield	1
9.	2040-305	Dust Shield Fixed Plate	1
10.	W 3/16"*3/4" L	Flat Head Machine Screw	4
11.	2040-203A	Head B (Upper)	1
12.	2040-203B	Head B (Lower)	1
13.	2040-301	Vertical Slide Way	2
14.	2040-202	Head A(Spindle Seat)	1
15.	W 3/8"*1 1/4" L	Socket Head Cap Screw	18
16.	2040-302	Shield Guide	2
17.	2040-312	Spindle Stopper	2
18.	W 3/4"*2 1/2" L	Socket Head Cap Screw	2
19.	2040-309	Dust Shield	1
20.	2040-311	Dust Shield	1
21.	2040-310	Dust Shield	2
22.	W 1/4"*1" L	Socket Head Cap Screw	12
23.	W 1"*2 1/2" L	Hexagonal Head Cap Screw	5
24.	2040-205	Frame Of Balance Weight	1
25.	2040-206	Balance Weight	3
26.	W 5/8"*1 3/4" L	Socket Head Cap Screw	20

SPINDLE SET ASS'Y

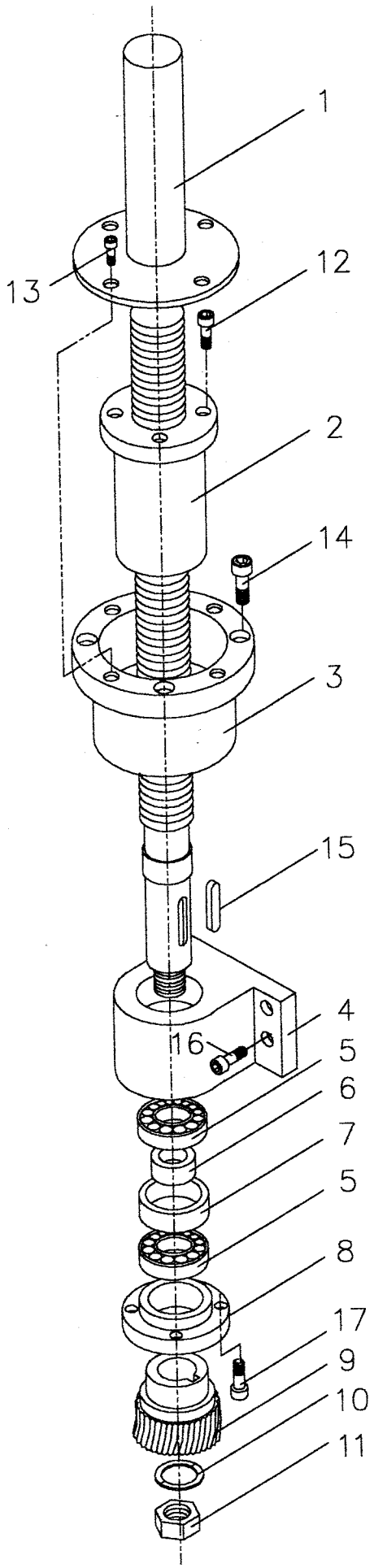


SPINDLE SET ASS'Y

(2040,2060 SERIES)

Index No.	Parts No.	Parts Name	Q'ty
1.	2040-107	Spindle Cover (Front)	1
2.	2040-105	Spindle Cover (Front)	1
3.	2040-106	Cover Nut (Front)	1
4.	B7210 P4	Bearing	6
5.	2040-108	Spacer (Inside)	2
6.	2040-109	Spacer (Outside)	2
7.	2040-104	Spindle Shaft	1
8.	2040-103	Spindle Housing	1
9.	2040-110	Spindle Cover (Rear)	1
10.	2040-112	Spindle Cover (Rear)	1
11.	2040-111	Cover Nut (Rear)	1
12.	1632-111	Spindle Nut (Rear)	1
13.	1632-113	Rubber Coupling	2
14.	10HP*4P	Spindle Motor	1
15.	10*8*35L	Key	1
16.	1632-120	Nut	1

UPPER&LOWER DRIVE ASS'Y (I)

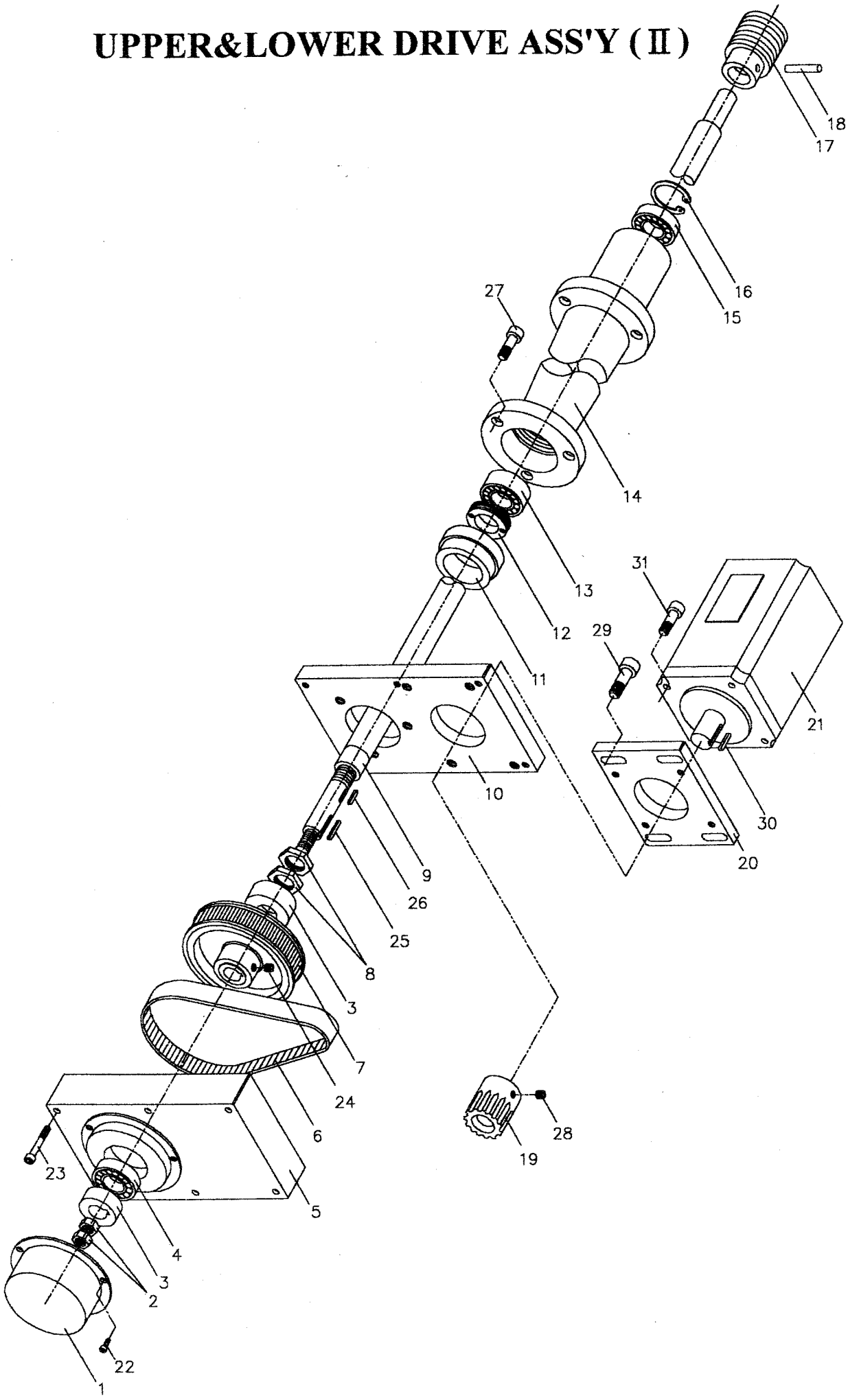


UPPER&LOWER DRIVE ASS'Y (I)

(2040,2060ND SERIES)

Index No.	Parts No.	Parts Name	Q'ty
1.	2040-204A	Worm	1
2.	2040-210A	Ball Screw With Nut	1
3.	2040-208B	Bearing Seat	1
4.	2040-214	Bearing Housing	1
5.	7205 P5	Bearing	2
6.	2040-215	Spacer	1
7.	2040-212	Spacer	1
8.	2448-434	Bearing Housing Cover	1
9.	2040-213	Worm Gear	1
10.	W3/4"	Spring Washer	1
11.	W3/4"	Hexagonal Nut	1
12.	W1/4" * 3/4" L	Socket Head Cap Screw	4
13.	W5/16" * 3/4" L	Socket Head Cap Screw	4
14.	W3/8" * 3/4" L	Socket Head Cap Screw	4
15.	7*7*25	Key	1
16.	W1/2" * 1 3/4" L	Socket Head Cap Screw	4
17.	W1/4" * 3/4" L	Socket Head Cap Screw	3

UPPER&LOWER DRIVE ASS'Y (Ⅱ)

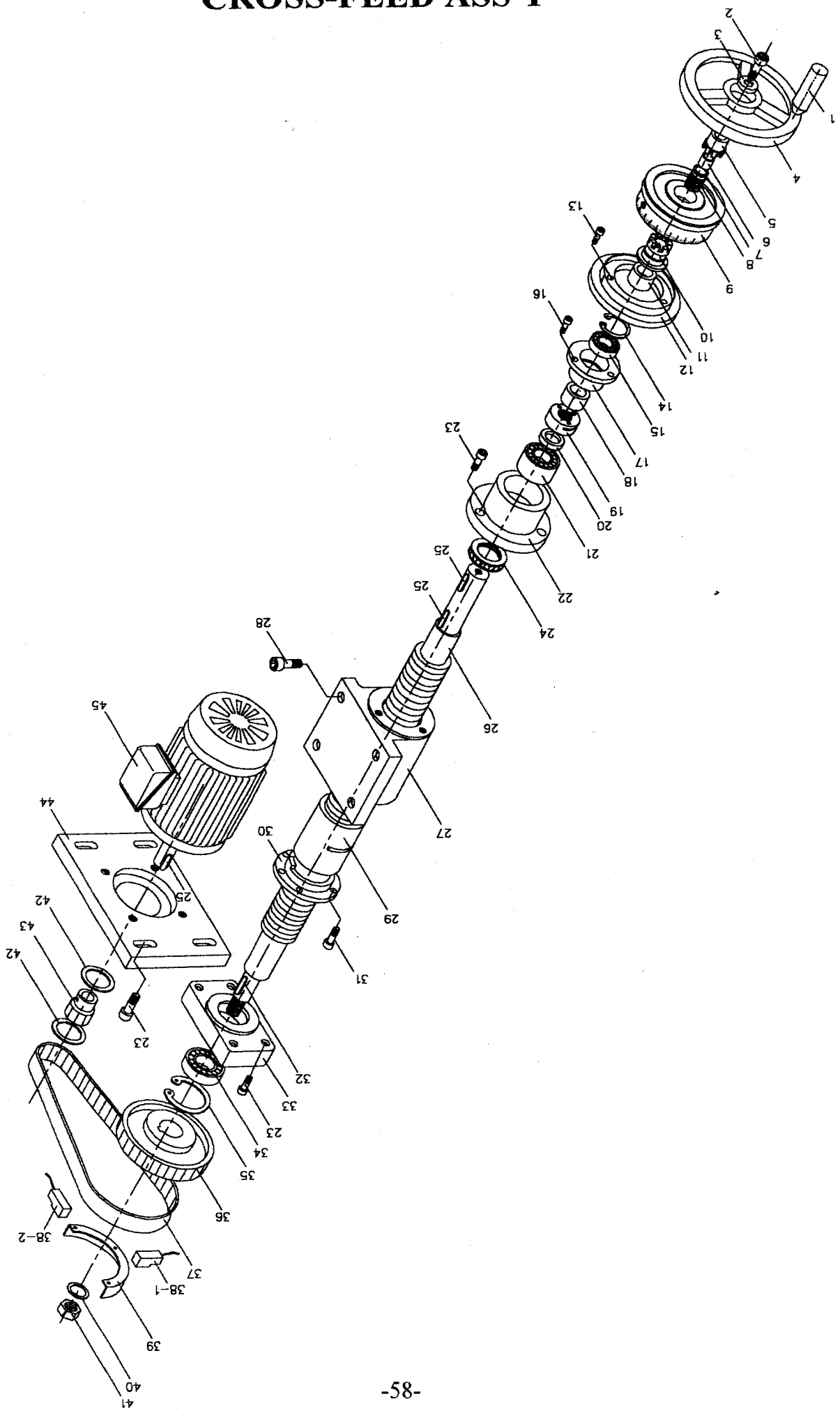


UPPER&LOWER DRIVE ASS'Y (Ⅱ)

(2040,2060ND SERIES)

Index No.	Parts No.	Parts Name	Q'ty
1.	1020-550	Cover	1
2.	W1/4"	Nut	2
3.	1020-548	Spacer	2
4.	1303	Bearing	1
5.	1020-543	Fixed Cover	1
6.	P72-5M-15-6W 500L	Timing Belt	1
7.	1020-544	Timing Belt Pulley	1
8.	AN04	Bearing	2
9.	2040-217A	Transmission Shaft	1
10.	1020-542	Fixed Plate	1
11.	2040-231	Spacer	1
12.	2040-219	Nut	1
13.	5205	Bearing	1
14.	2040-218A	Shaft Housing	1
15.	2205	Bearing	1
16.	R52-1	Snap	1
17.	2040-216A	Worm Shaft	1
18.	Ø6*40	Pin	1
19.	1020-546	Timing Belt Pinion	1
20.	1020-547	Servo Motor Plate	1
21.	BSM80B-2	Servo Motor	1
22.	W3/16" *1/4" L	Socket Head Cap Screw	3
23.	W1/4" *1 1/2" L	Socket Head Cap Screw	6
24.	W1/4"	Headless Screw	1
25.	5*5*15	Key	1
26.	5*5*20	Key	1
27.	W5/16" * 3/4" L	Socket Head Cap Screw	3
28.	W1/4"	Headless Screw	1
29.	W5/16" * 3/4" L	Socket Head Cap Screw	4
30.	6*6*25	Key	1
31.	W1/4" * 3/4" L	Socket Head Cap Screw	4

CROSS-FEED ASS'Y



CROSS-FEED ASS'Y

(2040,2060 SERIES)

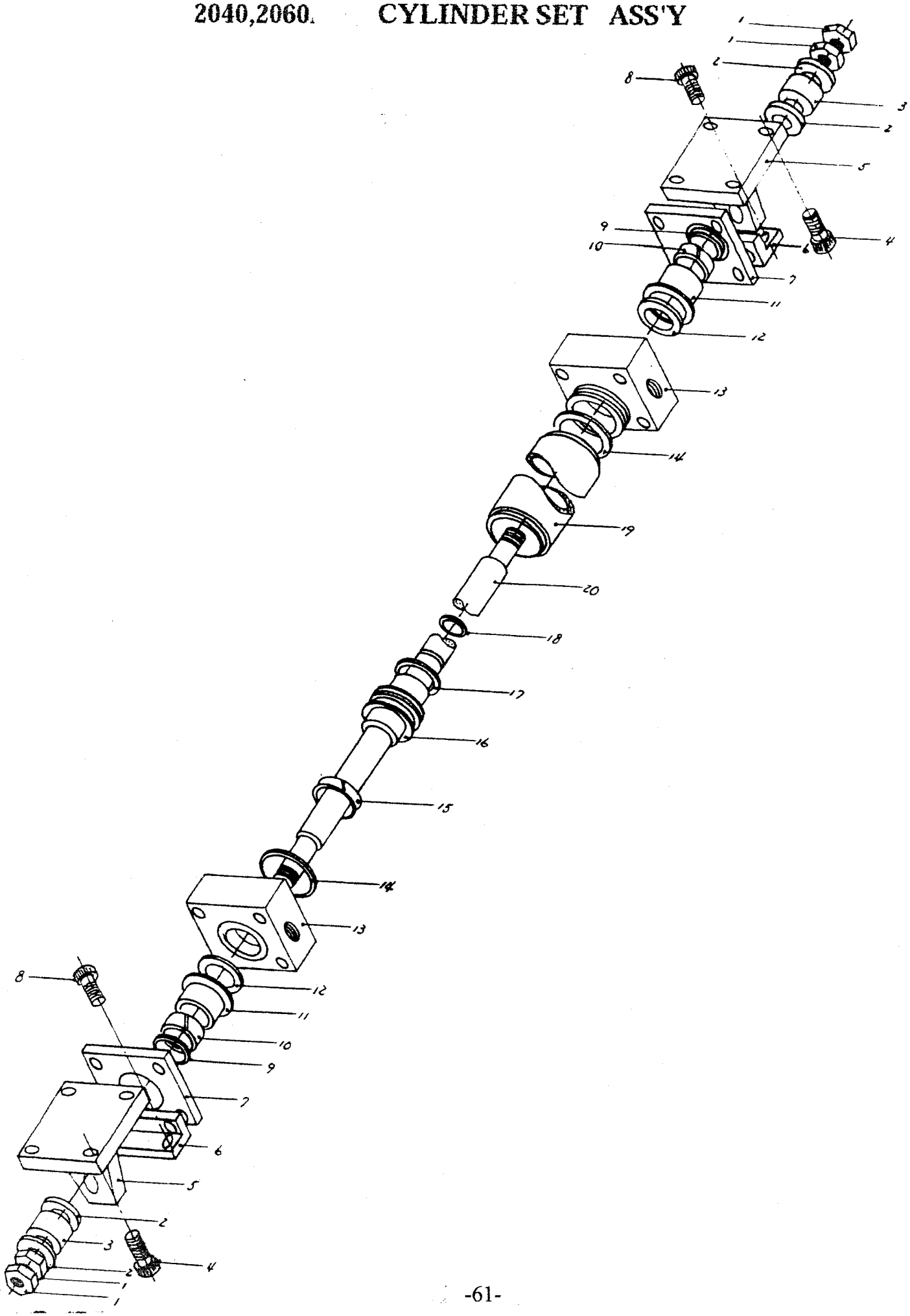
Index No.	Parts No.	Parts Name	Q'ty
1.	1020-728	Hand Grip	1
2.	W 1/4"*5/8"L	Socket Head Cap Screw	1
3.	2040-414	Washer	1
4.	1020-714	Hand Wheel	1
5.	1224-422A	Clutch B	1
6.	TA1715	Needle Bearing	1
7.	1020-639	Spacer	1
8.	1224-425	Spring Ring	1
9.	2040-404	Graduation Dial	1
10.	1224-424A	Clutch A	1
11.	2040-442	Washer	7
12.	2040-405	Dial Holder	1
13.	W 1/4"*1/2"L	Socket Head Cap Screw	7
14.	R 40	C Snap Ring	1
15.	B 2203	Bearing	15
16.	W 1/2"	Screw	1
17.	2040-440	Bearing Seat	1
18.	2040-442	Washer	1
19.	2448-432B	Lock Nut	1
20.	2040-409	Washer	1
21.	B5205	Bearing	1
22.	2448-435A	Bearing Housing	1
23.	W 3/8"*1"L	Socket Head Cap Screw	15
24.	51205	Bearing	1
25.	5*5*20L	Key	1
26.	2040-439	Cross Feed Leader Screw	1
27.	2040-478	Leader Screw Nut Base	1
28.	W 1/2"*1 3/4"L	Socket Head Cap Screw	4

CROSS-FEED ASS'Y

(2040,2060 SERIES)

Index No.	Parts No.	Parts Name	Q'ty
29.	2040-436	Nut Of Leader Screw	1
30.	2040-430	Backlash adjuster	1
31.	W 5/16"*1 1/4"L	Socket Head Cap Screw	6
32.	5*5*25L	Key	1
33.	2448-443	Bearing Housing	1
34.	B 1205Z	Bearing	1
35.	R-52	Snap Ring	1
36.	2040-411	Timing Belt Pulley(large)	1
37.	P 3/8"*330H	Timing Belt	1
38.	PS-05	Approximate Sensor	2
39.	2040-414	Inductive Ring	1
40.	W 1/2"	Washer	1
41.	W 1/2"	Hexagonal Nut	1
42.	2040-413	Timing Belt Pulley washer	2
43.	2040-412	Timing Belt Pulley(small)	1
44.	2448-447A	Cross Feed Motor Fixed Plate	1
45.	1/4 HP*6P	Cross Feed Motor	1

2040,2060. CYLINDER SET ASS'Y

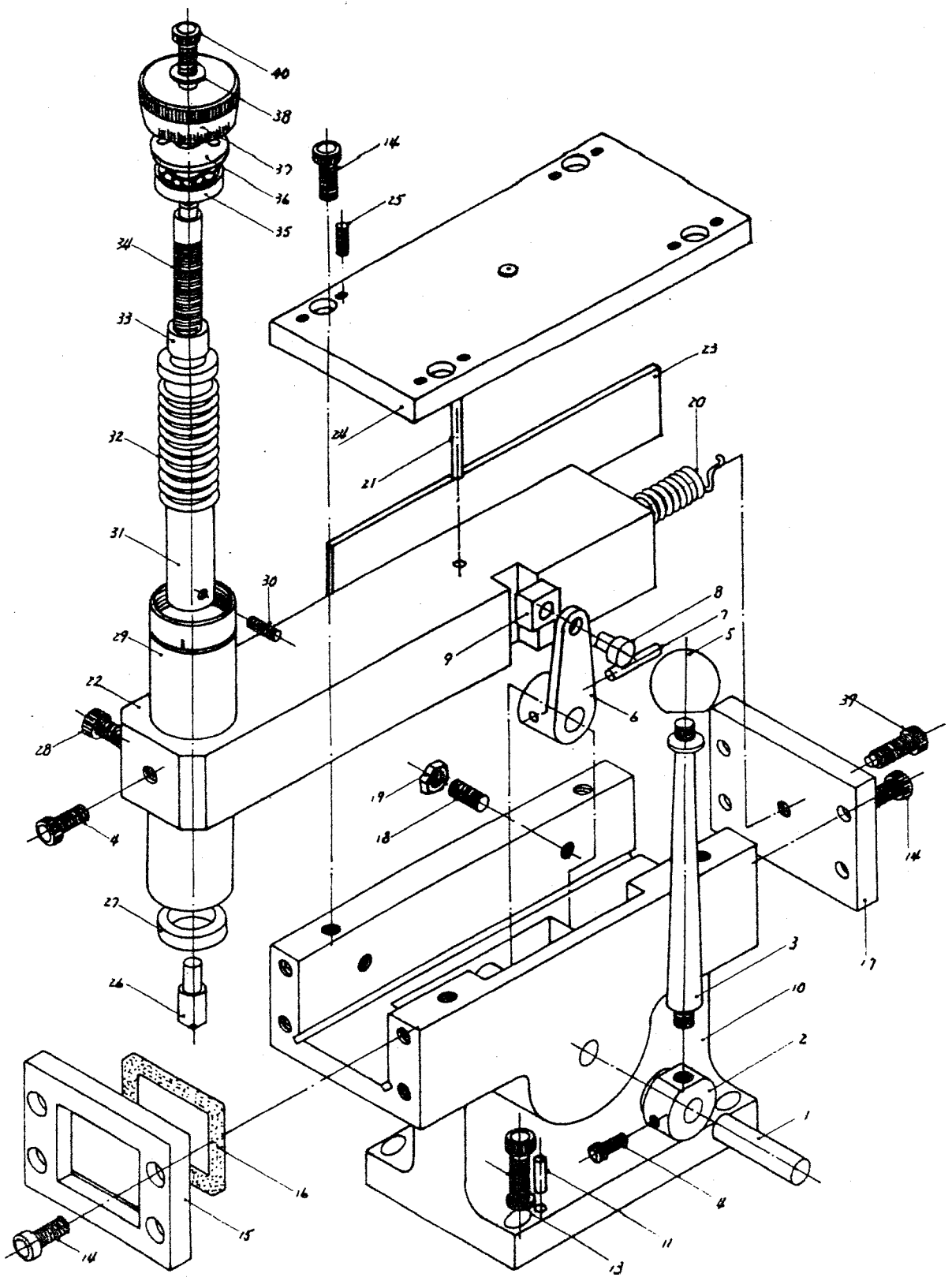


CYLINDER SET ASS'Y

(2040,2060 SERIES)

Index No.	Parts No.	Parts Name	Q'ty
1.	W 3/4"	Hexagonal Nut	4
2.	2448-610	Washer	4
3.	2448-609	Rubber Pad	2
4.	W 1/2"*1 1/2"L	Socket Head Cap Screw	8
5.	2448-611	Cylinder Bracket	2
6.	2448-604	End Bracket	2
7.	2040-608	Cylinder Clamper	2
8.	W 1/2"*1"L	Socket Head Cap Screw	4
9.	LH 25	Dust Seal	2
10.	30*25*9.7	Slide Seal	2
11.	2040-606	Auxliary	2
12.	USH 25	U Packing	2
13.	2040-602	End Cover	2
14.	G 40	O-Ring	2
15.	40*35*9.7	Slide Seal	1
16.	2040-605	Piston	1
17.	P 39	O-Ring	1
18.	P 21	O-Ring	1
19.	2040-601(for 2040 series)	Cylinder Pipe	1
	2060-601(for 2060 series)	Cylinder Pipe	1
20.	2040-603(for 2040 series)	Cylinder Rod	1
	2060-603(for 2060 series)	Cylinder Rod	1

2040,2060 SERIES PARALLEL DRESSER ASS'Y



PARALLEL DRESSER ASS'Y

(2040.2060SERIES)

Index No.	Parts No.	Parts Name	Q'ty
1.	2040-737	Shaft	1
2.	1020-738	Transmission Cap	1
3.	2040-739	Transmission Lever	1
4.	W 5/16"*1/2"L	Socket Head Cap Screw	2
5.	1020-740	Cap	1
6.	1020-741	Transmission Arm	1
7.	W 1/4"*3/8"L	Socket Head Cap Screw	1
8.	1020-742	Shaft	1
9.	1020-743	Slipper	1
10.	2040-730	Dresser Body	1
11.	W 1/4"*5/8"L	Set Screw	4
12.	W 5/16"*1"L	Socket Head Cap Screw	4
13.	W 5/16"	Spring Washer	4
14.	W 1/4"*1/2"L	Socket Head Cap Screw	13
15.	2040-733	Front Cover	1
16.	2040-735	Oil Immersed Pad	1
17.	2040-734	Rear Cover	1
18.	W 1/4"*1"L	Set Screw	3
19.	W 1/4"	Hexagonal Nut	3
20.	2040-744	Spring	1
21.	W 1/4"*1 1/2"L	Set Screw	1
22.	2040-731	Moving Body	1
23.	2040-736	Adjusting Plate	1
24.	2040-732	Top Cover	1
25.	W 3/16"*1/2"L	Set Screw	4
26.	2040-745	Diamond Cutter	1
27.	RE-20	U-Packing	1
28.	W 1/4"*1/2"L	Socket Head Cap Screw	1
29.	1020-746	Out-Holder	1
30.	W 3/16"*3/8"L	Socket Head Cap Screw	1
31.	1020-748	Moving Muff	1
32.	1020-749	Spring	1
33.	1020-750	Nut	1
34.	1020-751	Transmission Rod	1
35.	B6200Z	Bearing	1
36.	1020-752	Nut	1
37.	1020-753	Graduation Dial	1
38.	W 1/4"	Spring Washer	1
39.	W 1/4"*1/2"L	Socket Head Cap Screw	1