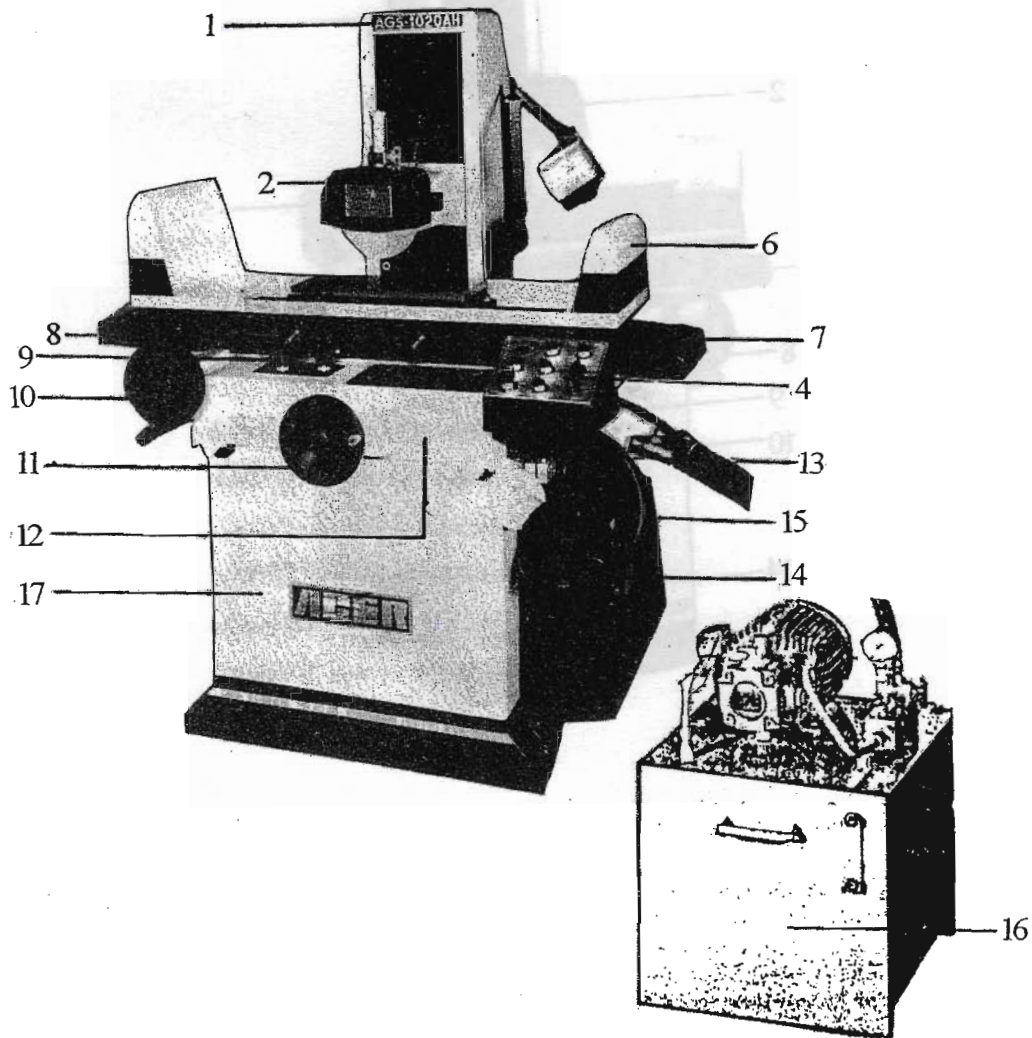


# ***CONTENTS***

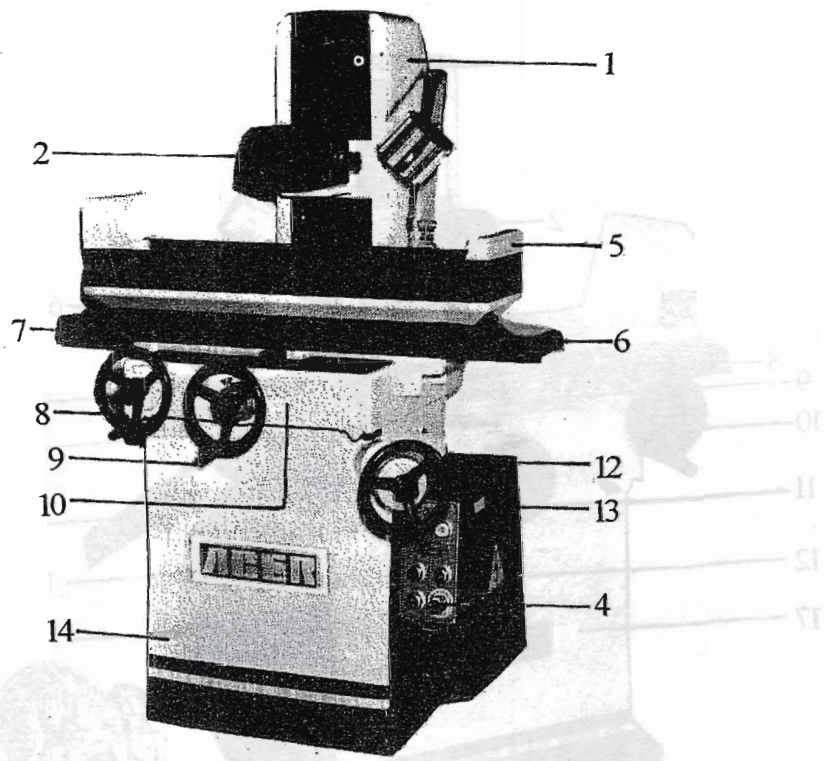
1. MAIN PARTS OF THE MACHINE
2. PROFILE DIMENSION
3. SPECIFICATION
4. PRECISION TABLE
5. INSTALLATION AND LIFTING NOTICE OF THE MACHINE
6. LEVELLING OF THE MACHINE
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8. SELECT AND BALANCE OF THE GRINDING WHEEL
9. INSTALLATION AND DISMANTLING OF THE GRINDING WHEEL
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12. HYDRAULIC SYSTEM DIAGRAM (AH & H SERIES)
13. FUNCTION OF OPERATION SWITCHES
14. ELECTRIC DIAGRAM AND LAY OUT
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16. CONSTRUCTION DIAGRAM AND PARTS LIST
17. USE OF THE OPTIONAL ATTACHMENT

\* We following a policy of continuous improvement of all our products, reserve the right to change specifications, mechanics, or designs at any time without notice or obligation.

# 1. MAIN PARTS OF THE MACHINE



- |  |                                       |
|--|---------------------------------------|
| 1. Up column                           | 10. Handwheel (longitudinal)          |
| 2. Wheel guard                         | 11. Handwheel (cross feed)            |
| 4. Electrical control panel (*)        | 12. Saddle                            |
| 6. Splash guard                        | 13. Cross feed travel stroke adjuster |
| 7. Table                               | 14. Handwheel (vertical)              |
| 8. Longitudinal travel stroke adjuster | 15. Electrical control box            |
| 9. Flow control lever                  | 16. Hydraulic pump unit               |
|  | 17. Base                              |

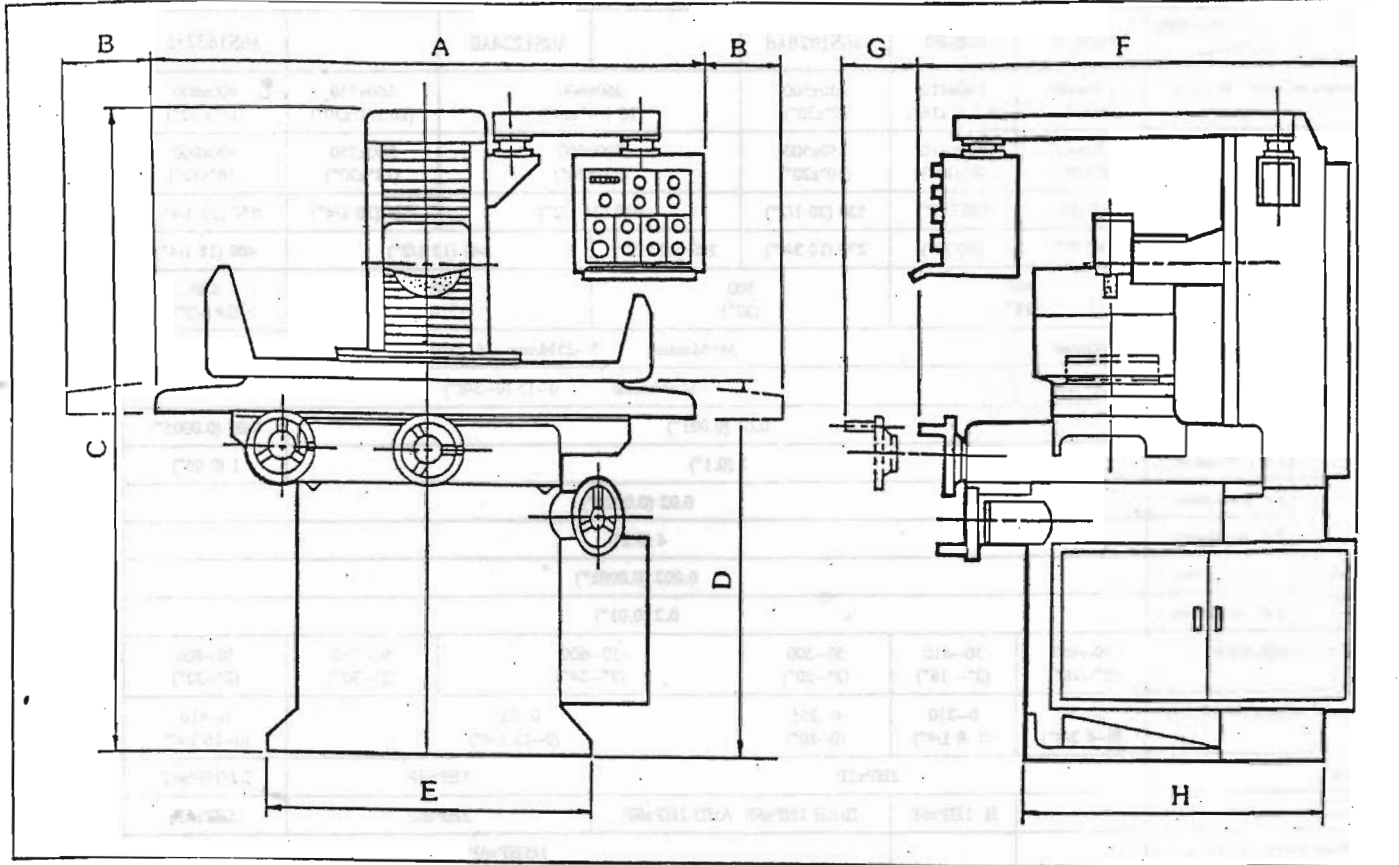


- |   |                                       |
|---|---------------------------------------|
| 1. Up column                              | 10. Saddle                            |
| 2. Wheel guard                            | 11. Cross feed travel stroke adjuster |
| 3. Parallel dresser (special accessories) | 12. Handwheel (vertical)              |
| 4. Electrical control panel               | 13. Electrical control box            |
| 5. Splash guard                           | 14. Base                              |
| 6. Table                                  |                                       |
| 7. Longitudinal travel stroke adjuster    |                                       |
| 8. Handwheel (longitudinal)               |                                       |
| 9. Handwheel (cross feed)                 |                                       |

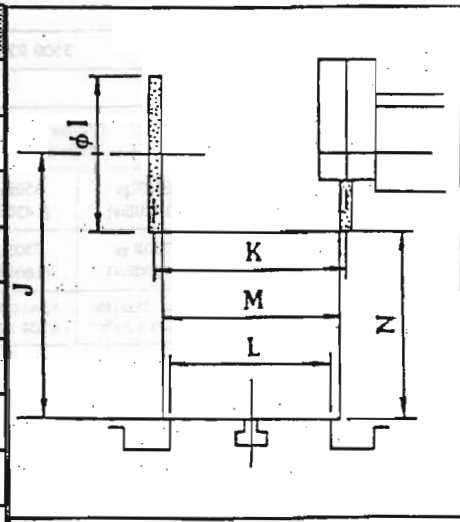
# 2. PROFILE DIMENSION

## PROFILE DIMENSION

Unit: mm



	AGS618	AGS200	AGS1020AH		AGS1224AH		AGS1632AH
A	1260 (49 1/2")	1160 (45 1/2")	1520 (60")	1850 (72 7/8")	1850 (72 7/8")	2150 (84 7/8")	2500 (98 1/2")
B	240 (9 1/2")	215 (8 1/2")	260 (10 1/4")	330 (13")	330 (13")	400 (15 3/4")	425 (16 3/4")
C	1660 (65 1/2")	1660 (65 1/2")	1720 (67 3/4")	1720 (67 3/4")	1880 (74")	1880 (74")	2000 (78 3/4")
D	940 (37")	940 (37")	940 (37")	940 (37")	980 (38 1/2")	980 (38 1/2")	1050 (41 3/8")
E	615 (24 1/2")	615 (24 1/4")	890 (35")	910 (35 7/8")	1010 (39 3/4")	1010 (39 3/4")	1050 (41 3/8")
F	850 (33 1/2")	900 (35 1/2")	1020 (40 1/4")	1065 (42")	1185 (46 1/2")	1185 (46 1/2")	1600 (63")
G	180 (7")	200 (8")	265 (10 1/2")	325 (13")	345 (13 1/2")	345 (13 1/2")	450 (17 3/4")
H	700 (27 1/2")	750 (29 1/2")	870 (34 1/4")	973 (38 1/4")	1035 (40 3/4")	1035 (40 3/4")	1425 (56")
I	200 (8")	200 (8")	203 (8")	203 (8")	355 (14")	355 (14")	355 (14")
J	460 (18")	460 (18")	500 (20")	500 (20")	595 (23 1/2")	595 (23 1/2")	620 (24 1/2")
K	165 (6 1/2")	215 (8 1/2")	265 (10 1/2")	320 (12 1/2")	335 (13 1/4")	335 (13 1/4")	450 (18")
L	150 (6")	160 (6 1/4")	230 (9")	260 (10 1/4")	260 (10 1/4")	260 (10 1/4")	400 (15 3/4")
M	150 (6")	200 (8")	250 (10")	300 (12")	300 (12")	300 (12")	400 (15 3/4")
N	360 (140")	360 (14")	400 (15 3/4")	400 (15 3/4")	415 (16 1/2")	415 (16 1/2")	445 (17 1/2")



# SPECIFICATIONS:

Unit : mm

ITEM	MODEL	AGS618	AGS200	AGS1020AH		AGS1224AH		AGS1632AH	
Working surface of table (W.x L.)		150x460 (6"x18")	160x410 (6 1/4"x16")	230x500 (9"x20")		260x600 (10 1/4"x24")		260x750 (10 1/4"x30")	400x800 (16"x32")
Max. grinding surface (W.x L.)		150x460 (6"x18")	200x410 (8"x16")	250x500 (10"x20")		300x600 (12"x24")		300x750 (12"x30")	400x800 (16"x32")
Max. horizontal travel table		485 (19")	430 (17")	520 (20 1/2")		620 (24 1/2")		720 (30 1/4")	850 (33 3/4")
Max. cross travel of table		180 (7")	200 (8")	270 (10 3/4")	320 (12 1/2")		340 (13 1/2")		460 (18 1/4")
Distance between table surface and spindle center		460 (18")		500 (20")		595 (23 1/2")		620 (24 1/2")	
Variable table speed	Manual	M=Manual 5--25M/min (16--80fpm)							
Auto. crossfeed	Manual	M=Manual 0--15 (0--3/8")							
Downfeed handwheel	Per graduation	0.01 (0.001")							0.01 (0.0005")
	Per revolution	2 (0.1")							1 (0.05")
Crossfeed handwheel	Per graduation	0.02 (0.0005")							
	Per revolution	4 (0.2")							
Auto. downfeed Micro adjustment	Per graduation	0.002 (0.0001")							
	Per revolution	0.2 (0.01")							
Longitudinal travel adjustable from.....to		50--460 (2"--18")	50--410 (2"--16")	50--500 (2"--20")		50--600 (2"--24")		50--750 (2"--30")	50--800 (2"--32")
Crossfeed travel adjustable from... ..to		0--160 (0--6 3/8")	0--210 (0--8 1/4")	0--255 (0--10")		0--310 (0--12 1/4")		0--410 (0--16 1/4")	
Spindle motor		2HPx2P				5HPx4P		7 1/2HPx4P	
Hydraulic pump motor			H 1HPx6P	H/AH 1HPx6P AHD 2HPx6P		2HPx6P		3HPx6P	
Auto. crossfeed motor				1/5HPx6P					
Auto. downfeed motor				AHD 1/4HPx4P		AHR 1/5HPx6P AHD 1/4HPx4P			
Grinding wheel (O.D*T*LD)		203x12.7x31.75 (8"x1/2"x1 1/4")				355x31.75x127 (14"x1 1/4"x5")		355x50.8x127 (14"x2"x5")	
Rotation speed of spindle		3500 RPM/60HZ 2900 RPM/50HZ				1750 RPM/60HZ 1450 RPM/50HZ			
Coolant pump		1/8HP							
Max. load (Excl. chuck weight)		200Kgs (440lbs)		250Kgs (550lbs)		300Kgs (660lbs)		700Kgs (1540lbs)	
Machine weight	Net	630Kgs (1430lbs)	650Kgs (1430lbs)	1300Kgs (2660lbs)	1700Kgs (3740lbs)	1900Kgs (4180lbs)	2000Kgs (4400lbs)	2800Kgs (6160lbs)	
	Gross	730Kgs (1600lbs)	730Kgs (1600lbs)	1550Kgs (3410lbs)	1900Kgs (4180lbs)	2200Kgs (4840lbs)	2300Kgs (5060lbs)	3300Kgs (7260lbs)	
Packing dimension		1520x1280x1880 (60"x50 1/2"x74")	1420x1280x1880 (56"x50 1/2"x74")	2070x1700x2108 (81 1/2"x67"x83")	2120x1800x2180 (83 1/2"x70 3/4"x86")	2120x1690x2260 (83 1/2"x66 1/2"x89")	2420x1690x2260 (90 1/4"x66 1/2"x89")	2750x2220x2286 (106 1/2"x87 1/2"x90")	

H : Hydraulic longitudinal feed.

AH : Hydraulic longitudinal feed and Auto. Cross feed.

AHR : Auto. longitudinal. Cross feed and Rapid down feed

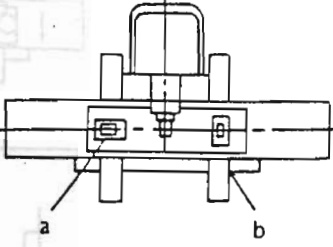
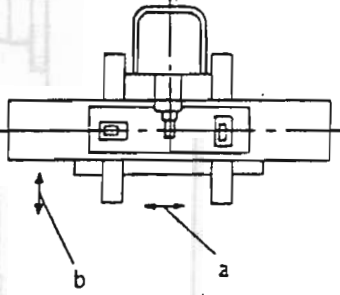
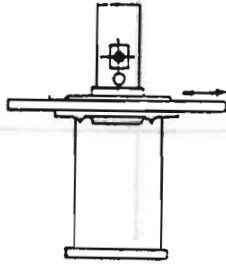
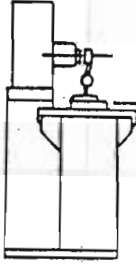
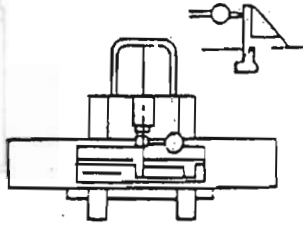
AHD : Auto. longitudinal. Cross feed and auto down feed

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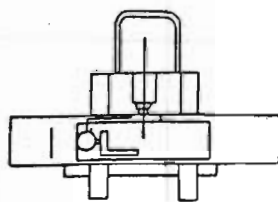
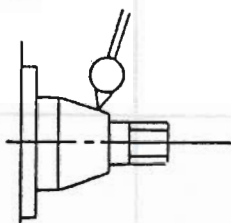
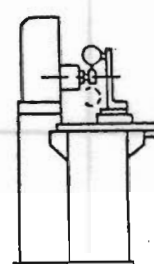
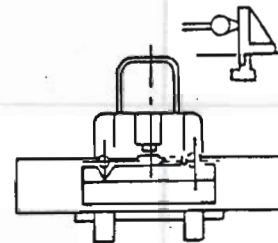
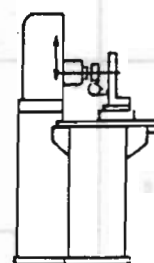
## STANDARD ACCESSORIES:

Operation manual.....	1pc.	Grinding wheel.....	1pc.
Tool box and tools.....	1pc.	Flange extractor.....	1pc.
Wheel flange.....	1pc.	Diamond Dresser.....	1pc.
Wheel balancing base.....	1pc.	Diamond Dresser base.....	1pc.
Wheel balancing arbor.....	1pc.	Work light.....	1pc.

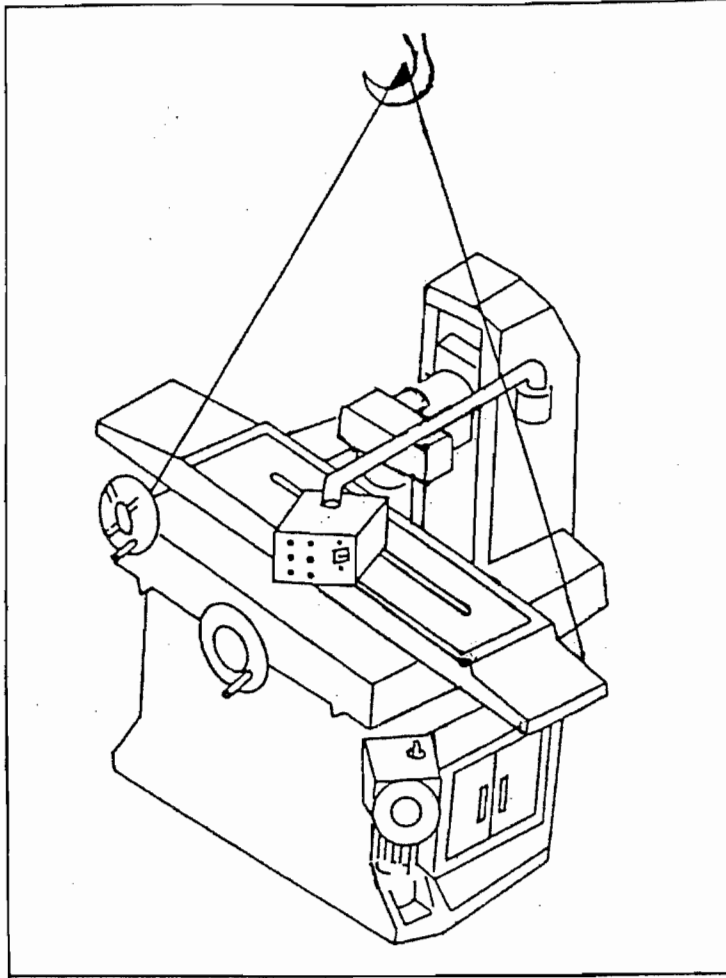
# 4. PRECISION TABLE

No.	Check taken	Illustration	Permissible Errors'
1	a) Level longitudinally (spirit level) b) Level across (spirit level)		a) 0.02 per 1000 mm.  b) 0.02 per 1000 mm.
2	Straightness of table movement. a) Longitudinally. b) Cross traverse.		a) 0.02 per 1000 mm.  b) 0.02 per 1000 mm.
3	Rise and fall of table in longitudinal traverse.		0.01 per 1000 mm.
4	Table surface parallelity to its cross traverse		0.01 per table width
5	Parallelity of clamping slots to table traverse		0.015 per 1000 mm.



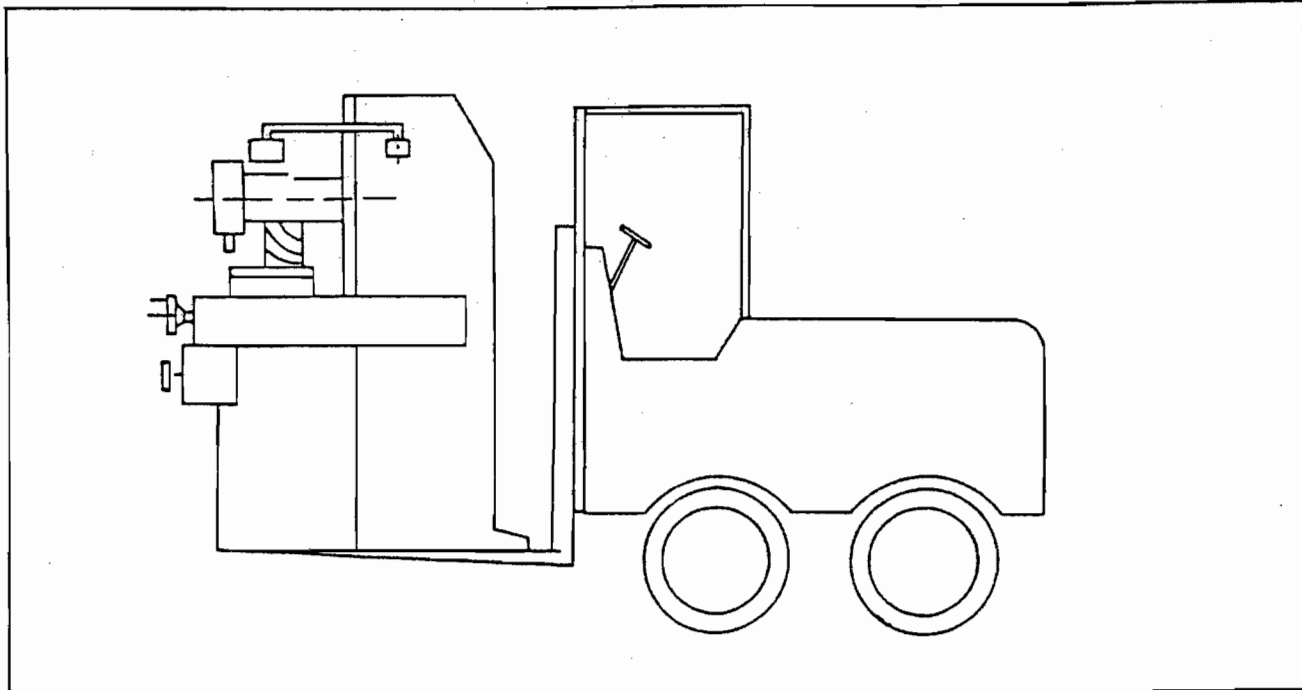
6	Clamping slots at right angles to table cross traverse		0.02 per 300 mm.
7	True running of taper of grinding spindle.		0.01 mm.
8	Parallelity of grinding spindle to table (transition test with 100 mm arm)		0.02 per 300 mm.
9	Grinding spindle at right angles to clamping slots (transition test with 200 mm. arm)		0.02 per 300 mm.
10	Vertical traverse of grinding spindle carrier at right angles to table in cross plane of machine		0.01 per 100 mm.

## 5. INSTALLATION AND LIFTING NOTICE OF THE MACHINE



The machine has been investigated and adjusted before it is moved out of the factory. The most important is to surely prevent machine from hit while the machine is in transportation and installation.

Use wrecker and hook to transport the machine; steel wire hooks four hanging pegs which are on the two sides of the machine. But you have to pay attention to the balance of the machine, and please put some separator between steel wire and machine to protect paint.



Use fork truck to put the machine as upper chart description



- Clean machine

After opening the wooden case, you have to prevent process surface from rust. You will find the machine is coated with thin rustproof oil. Please wipe off the rustproof oil by soft cloth and light oil. Iron plat or knife will damage the paint.

- Fastening equipment for movement or packing

when move (or pack) the machine, working table is fixed from front-left and rear right sides, and crossfeed of saddle is fixed from the right and left sides of saddle and base body. This is only used while move of the machine. As soon as the machine is well installed, you have to loosen the fixed equipment.

- Location of the machine:

Location of the machine will influence the grinding precision and effeciency. You have to carefully dispose it as well as boring machine. Very precise process is asked by any kind of grinding machine. But in the fact, many grinding machines always be located among with milling machine, drilling machine, shaping machine and slotting machine. Obviously, we won't be satisfied with the process from these grinding machines, because the vibration from other machines will transmit to grinding machine and produce lines on grind surface.

- \* Unsteady land cannot be located grinding machine, otherwise, the machine will lose its correct shape.

# INSTALLATION OF 618, and 200 TYPE

In spite of the table, all equipment are assembled in order to protect the slideway. So, after installing the machine, you must place the table according to the following ways:

1. Circle the steel wire rope for four times round the drum (Fig 1).
2. Assemble the steel ball and steel ball retainer, then place them on the slideway (Fig 2).
3. Lift the table carefully and put it on the slideway against the steel ball.
4. Fix the steel wire rope on the fixed stand under the table (Fig 3).
5. The steel wire rope will loose and slide on the drum after a long use, in this case you must adjust the adjusting bolt.

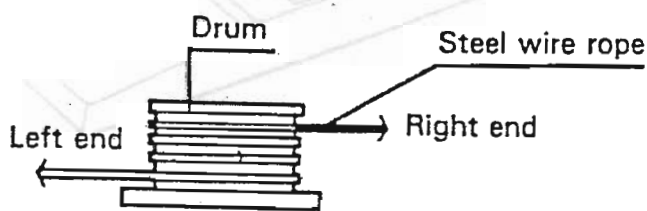


Fig 1

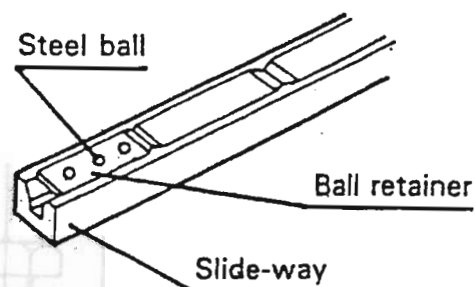


Fig 2

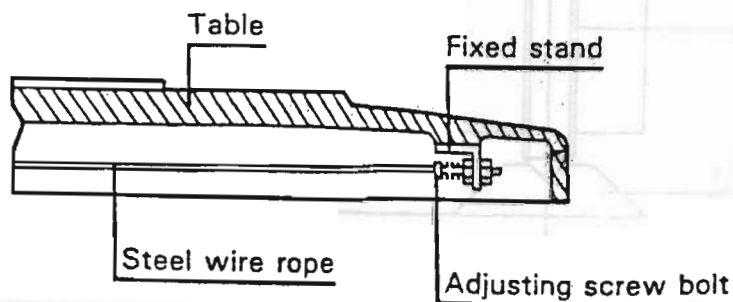
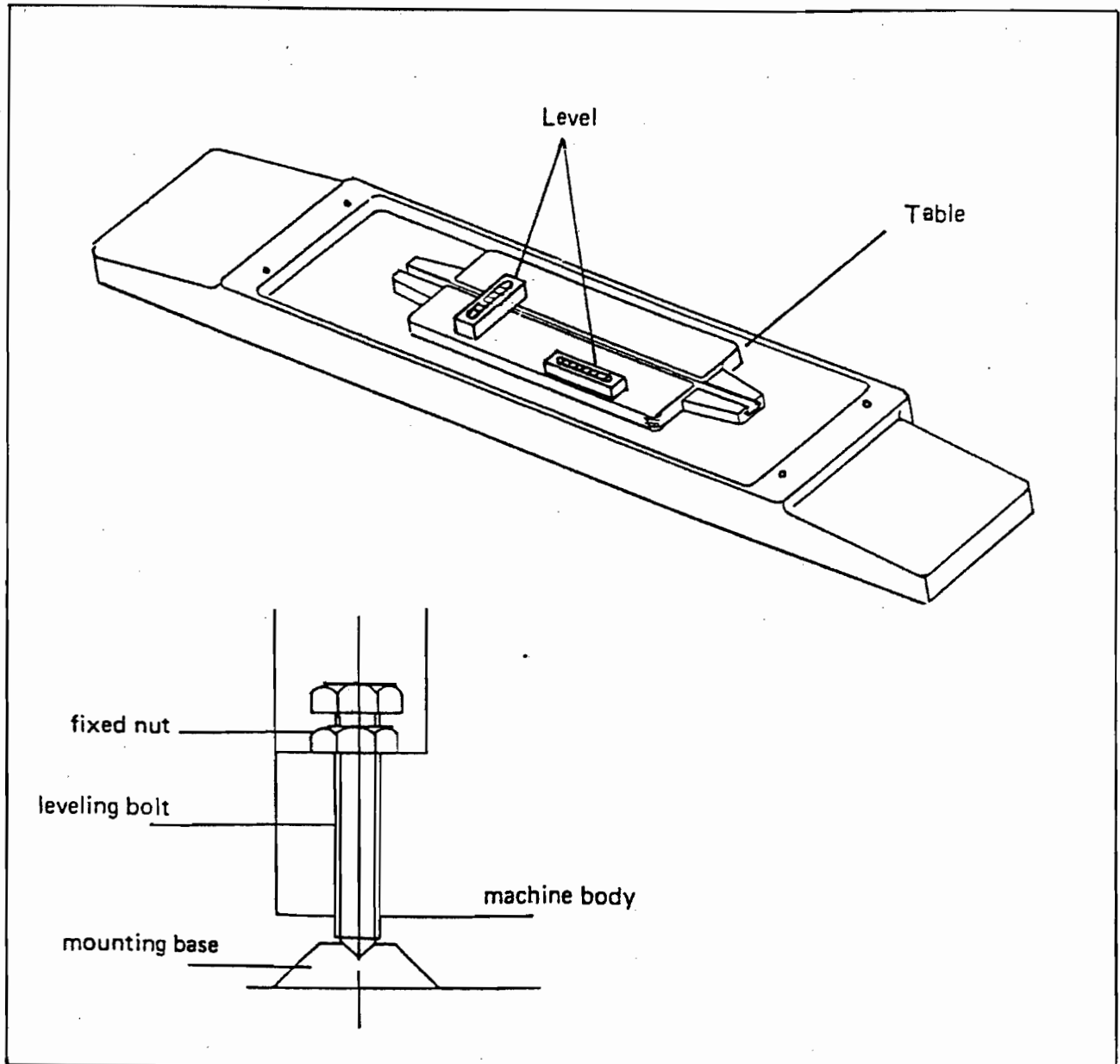


Fig 3

## 6. LEVELLING OF THE MACHINE

Generally speaking, the machine doesn't need of any special foundation except very precision grind, but the machine has to be located on even and smooth place where is without any vibration.

The settlement of the machine by smoothly put three (or four) adjusting screws on the foundation. Put precision level (0.02mm/M) as per chart description and adjust level within one graduation.



After first level adjusting of the machine, you have to readjust once two weeks in first month, and then, adjust once every three months after the foundation is stable.

# 7. NOTICE BEFORE MACHINING

1. Wire the machine according to the electric circuit diagram.
2. Install the machine with adequate "body" clearance beyond the maximum travels.
3. Operator always wears protecting eye-glasses.
4. Check wheel rotation, it must be clockwise.
5. Do not operate the grinding wheel faster than the speed shown on the wheel blotter.
6. Before starting machine, verify that the wheel is secure.
7. Do not operate the machine if the wheel guard has not locked.
8. Verify that the work is secure and /or the magnetic chuck energized
9. Verify that the grinding wheel clears the work.

## CAUTION

- \* General motor is constructed with two voltages, but we always preconnect it with customers' ordered voltage. In case you need the other voltage, please remember to alter them to your asked style before you connect every points as per below electric diagram. Otherwise, these equipments will be burned or cannot work caused by shortage of power.

Spindle motor.

Hydraulic motor

Coolant and duster motor

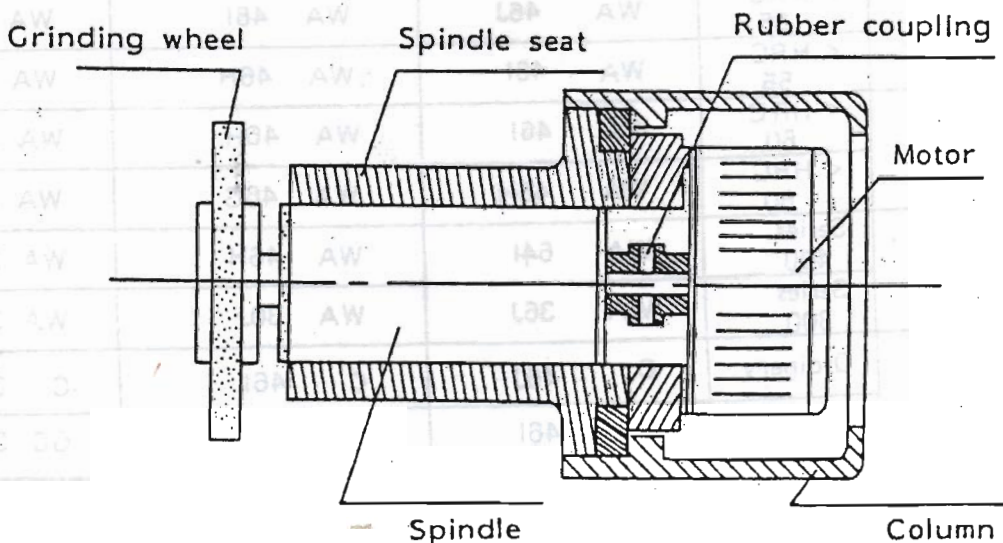
Three phase transformer

Single phase transformer

### (A) WHEEL VIBRATION CHECK-UP

If the spindle vibrates, please take off the wheel, and then turn on spindle motor again, and check the following points:

1. If no vibration occurs on spindle, it means the vibration comes from the wheel, please re-balance the wheel and wheel flange.
2. If the spindle still vibrates, please take off the motor and check the coupling cushion.
3. As the spindle is under precision assemble, so please do not disassemble it yourself.
4. As the spindle is running at a very high speed, so the wheel must have very well balance otherwise it will cause the spindle vibrates and the wheel breaks.



# 8. 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 is 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.

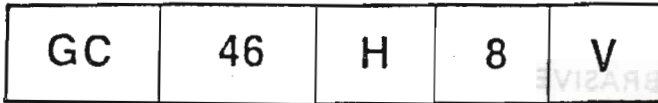
## GRINDING WHEEL RECOMMENDATION

1. Maintenance:  
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

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

# GRINDING WHEEL MARKINGS



Kind of Abrasive

Grain

Grade

Structure - Kind Of Bond

## 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	stickly	brittle

# GRADE

STRENGTH OF THE BOND WHICH HOLD ABRASIVE

Soft	A – H
Medium	I – P
Hard	Q – Z

Grinding Condition	Grade	Soft	Hard
	Workpiece Hardness		hard
Contacted Dimension		wide	narrow
Wheel Speed		quick	slow
Movement Of Works		slow	quick
Precision		good	bad
Operator		skill	non-skill

# STRUCTURE

THE NUMBER REFERS TO THE RELATIVE SPACING OF THE GRAINS OF ABRASIVE:

Close	0 – 5
Medium	6 – 9
Wide	10 – 12

Grinding Structure	Structure	Wide	Close
	Surface Roughness		coarse
Contacted Dimension		wide	narrow
Workpiece Hardness		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" 0.0015–0.03mm	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

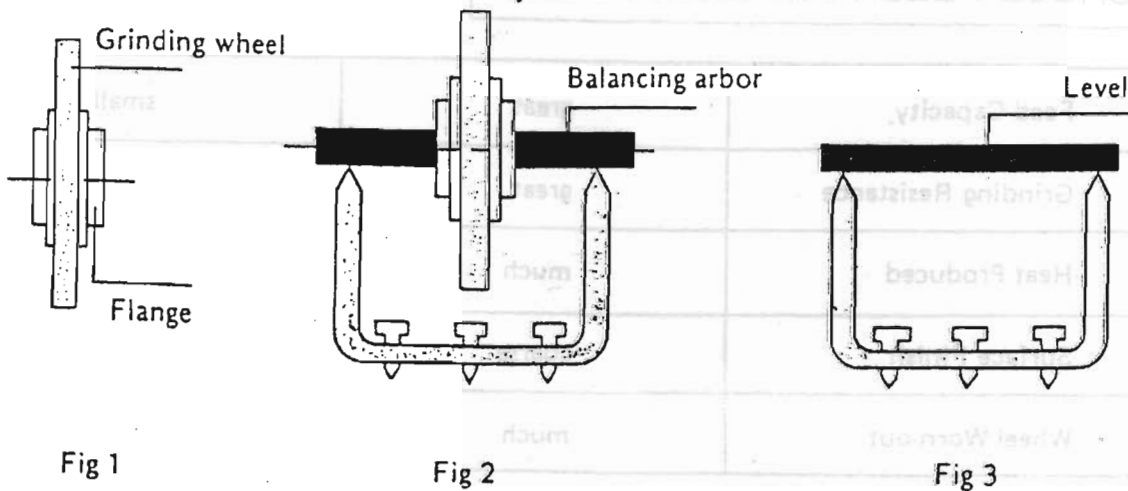
Accurate grinding, brightness of work-piece, spindle and bearing life are greatly concerned with the balance of wheel, and also eliminate the wheel's internal stress.

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 more 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 wheel 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 (✓), (Fig 4)
3. Lock the balancing block [B] on the opposite side of center of gravity and do not move any more. (Fig 5).
4. Put two balancing blocks [P] at equal distance from [B] (Fig 6)
5. 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.
6. After balancing, you must let the wheel running under normal speed for at least five minutes.
7. Since long-time grinding will make the wheel loses it's balance. You must check and re-balance it occasionally.
8. 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 un-balance.



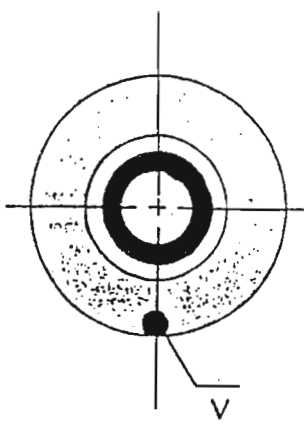


Fig 4

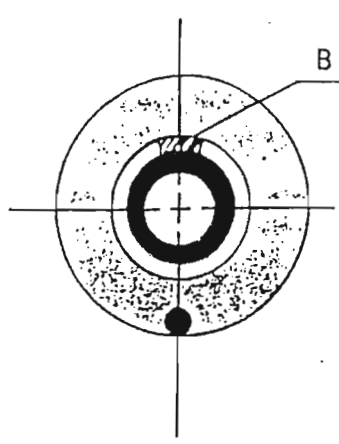


Fig 5

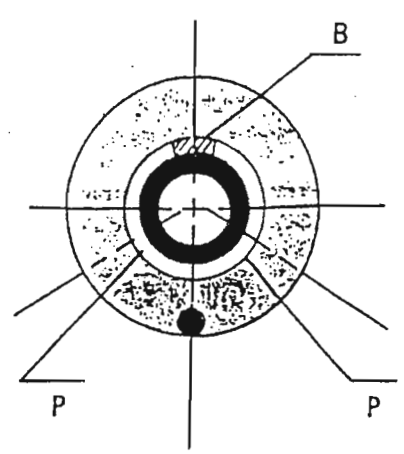
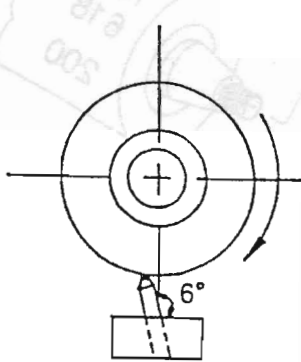


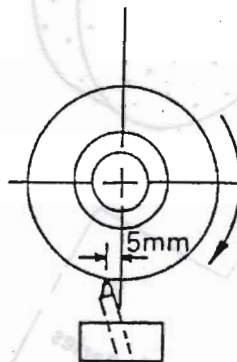
Fig 6

## HOW TO DRESS GRINDING WHEEL AND USE DIAMOND DRESSER:

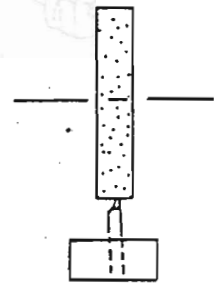
- When you dress grinding wheel, diamond inevitably wear along the machining direction, so that the diamond dresser has to be put at the position of angle  $6^\circ$  slant to keep its sharp. (fig 1)
- When you are going to dress the grinding wheel, put the sharp top of diamond dresser at approximately 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 the 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 0.02mm, 0.01mm, 0.005mm reduced gradually and coordinate 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.

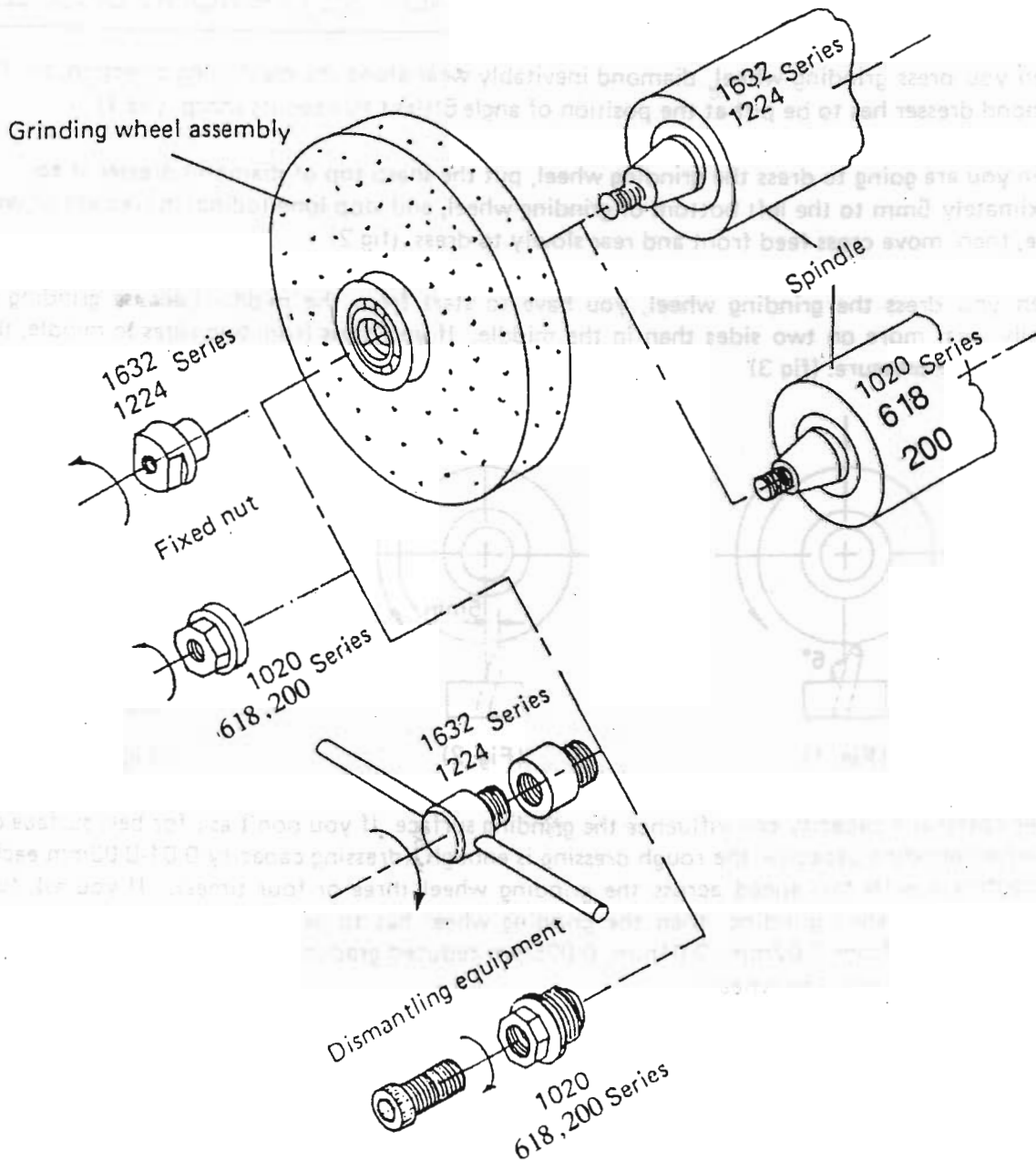
# 9. INSTALLATION AND DISMANTLING OF THE GRINDING WHEEL

## Installation:

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

## Dismantling:

1. Loosen the fixed nut clockwise.
2. Firmly hold the grinding wheel by one hand, and dismantle it clockwise until the grinding wheel breaks away spindle. Then, you can take down the grinding wheel.

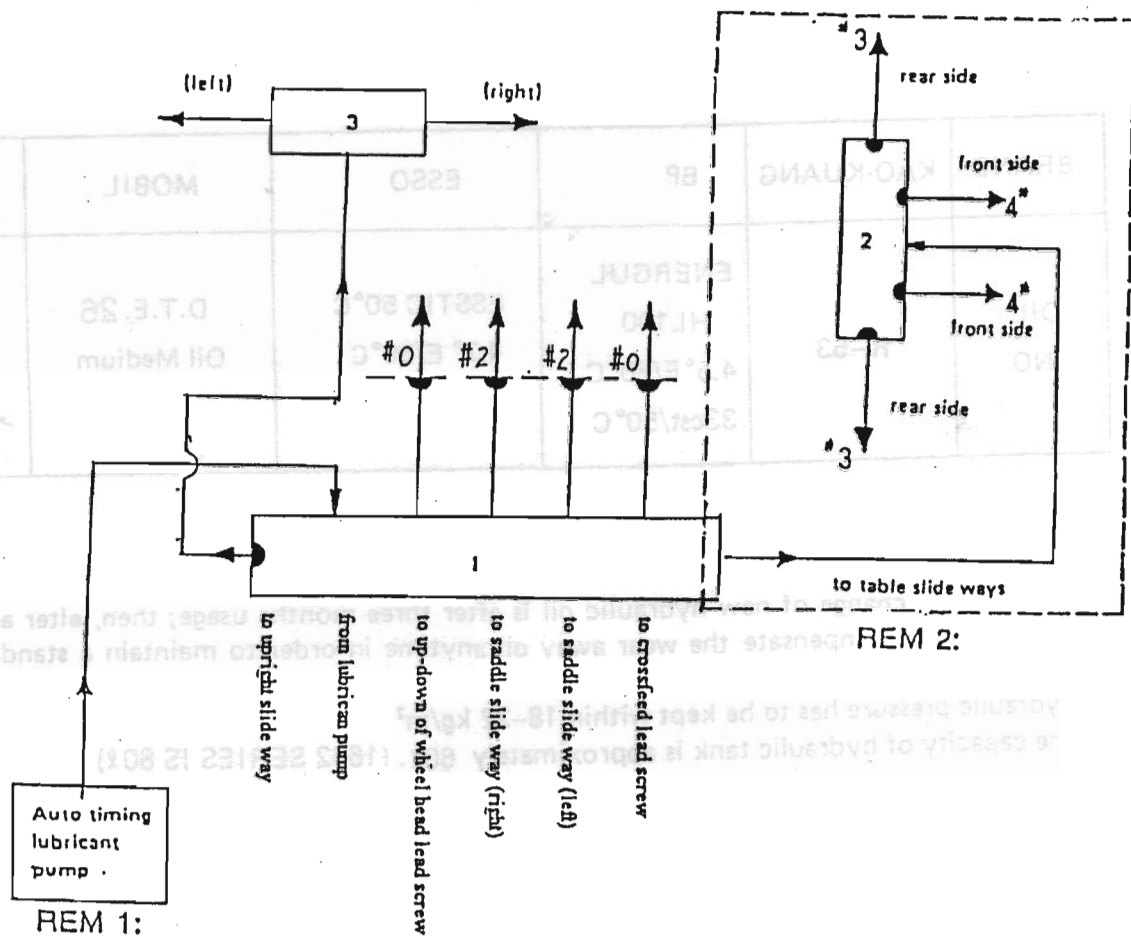


# 10. LUBRICANT SYSTEM AND DIAGRAM

Lubricated system effects the best tolerance and long life of the machine. Our machine is equipped with one shot lubrication system for easy operator's maintenance. In order to keep the machine in best condition, the user has to pay attention for the following:

1. Keep the lubricant more than 1/3 in lubricant pump any time.
2. Check slides lubricated condition. When slides are dry, stop and machine Imm. Until the lubrication is correct.
3. Please use indicated brand and number of the lubricant in order to obtain the best lubrication.

Interval	Quantity	BP	ESSO	MOBIL	SHELL
Every 10 minutes	Each time 3cc-6cc	SAE30	SAE30	Vactra #2.	SAE 30



1. 7 ways distributor
  2. 5 ways distributor
  3. 3 ways distributor
  4. Joint of ratio distribution controller (one direction)
- After Hydraulic pump switching on, the timing lubricant pump will implement automatic lubrication once every ten minutes.
  - Please refill lubricant very often.

REM 1: Hand pull lubricant pump for AGS 618 , 200 ,1020 . Please pull lubricated lever 2--3 times in every 2--3 hours when the machine is in working condition.

REM 2: Model AGS 618 , 200 ,1020 does not have this section.

# 11. COMMENTS FOR HYDRAULIC OIL CHOICE AND USAGE

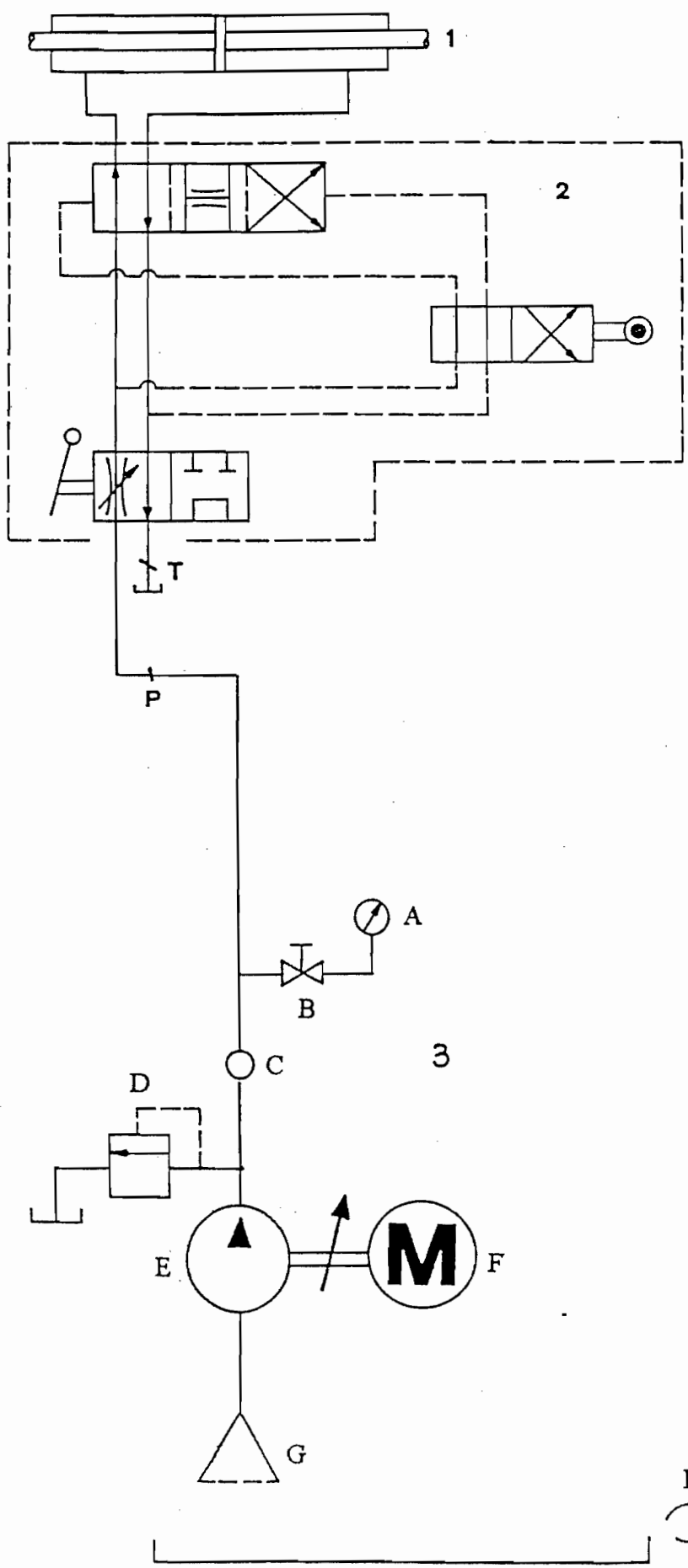
Hydraulic oil has to be maintained in adequate viscosity. More or less viscosity will decrease working efficiency and increase wear of the machine. So please use our suggested brand and number of hydraulic oil in order to get best results. Hydraulic oil will become inferior after use a period of time. 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 flavorless 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-53	ENERGUL HL100 4.5° E/50°C 33cst/50°C	ESSTIC 50°C 4.7° E/50°C	D.T.E. 26 Oil Medium	Teilus oil 29

- \* 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 has to be kept within 18--22 kg/m<sup>2</sup>.
- \* The capacity of hydraulic tank is approximately 60ℓ. (1632 SERIES IS 80ℓ)

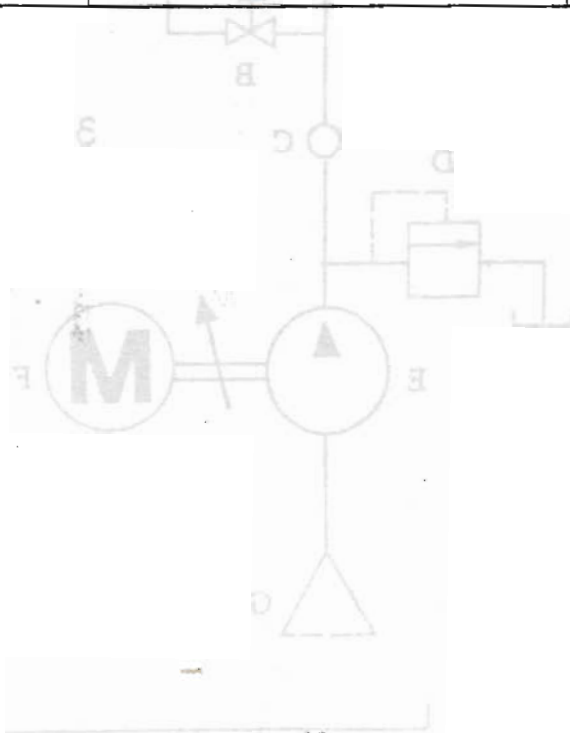
# 12. HYDRAULIC SYSTEM DIAGRAM (AH&H SERIES)





# HYDRAULIC SYSTEM PARTS LIST

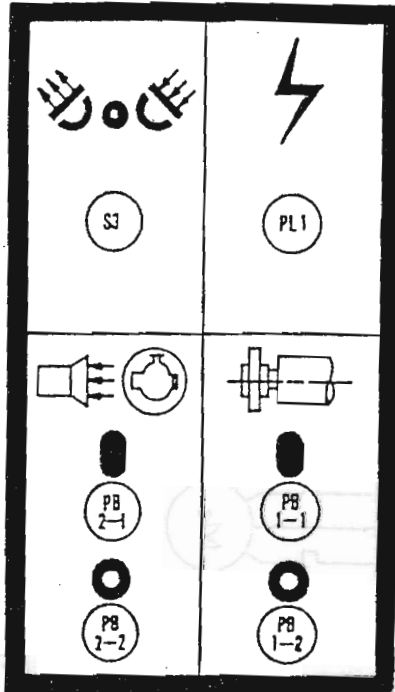
NO.	PART NO.	PARTS NAME	REMARK
1	Cylinder Assembly	Cylinder Of Table	Different machine type has difference kind of parts. So please refers the detailed parts ass'y .
2	Vavle Assembly	Flow and direction Control Unit	
3	Hydraulic Pump Unit		
A	I. 1020.AH TYPE. are same unit.	Pressure Guage	
B		Guage Cock	
C	II. 1224AH TYPE. are same.	Check Valve	
D		Relief Valve	
E	III. 1632AH TYPE is the other type unit.	Pump	
F		Motor	
G		Oil Filter	
H		Oil Level Indicator	



# 13. FUNCTION OF OPERATION SWITCHES

AGS618  
200 SERIES

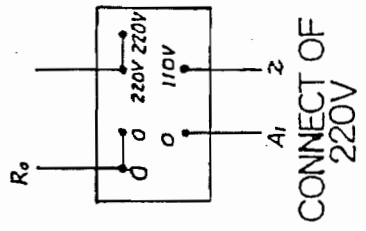
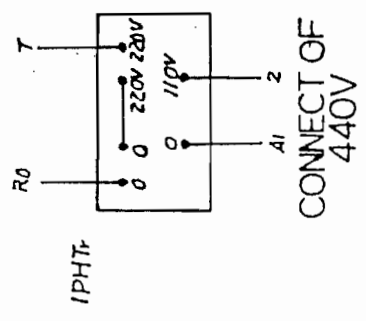
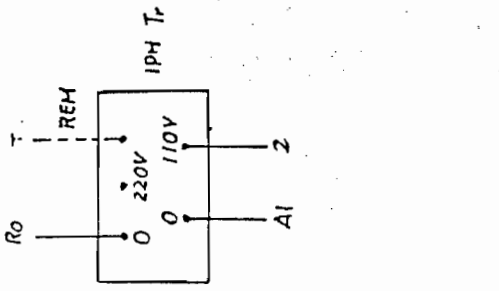
OPERATION PANEL



DESCRIPTION OF FUNCTION

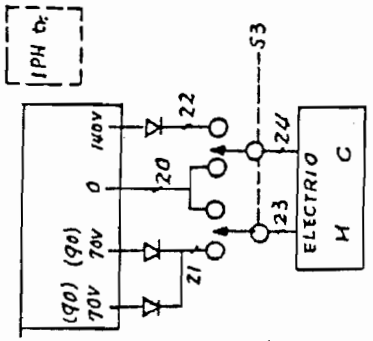
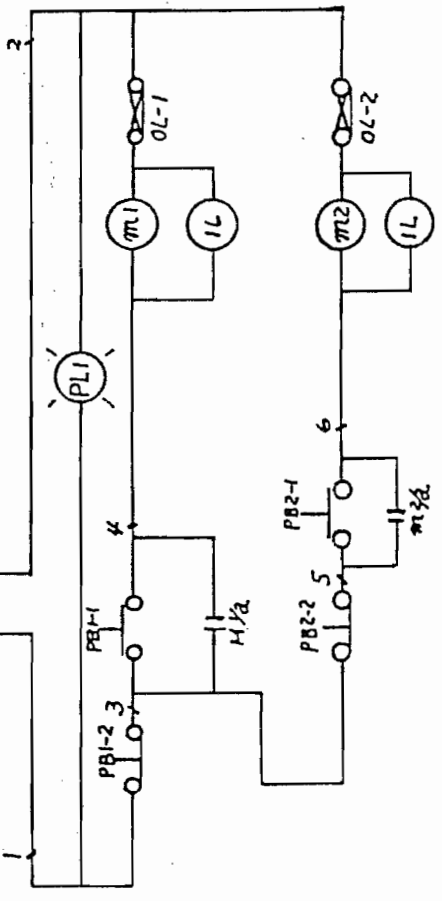
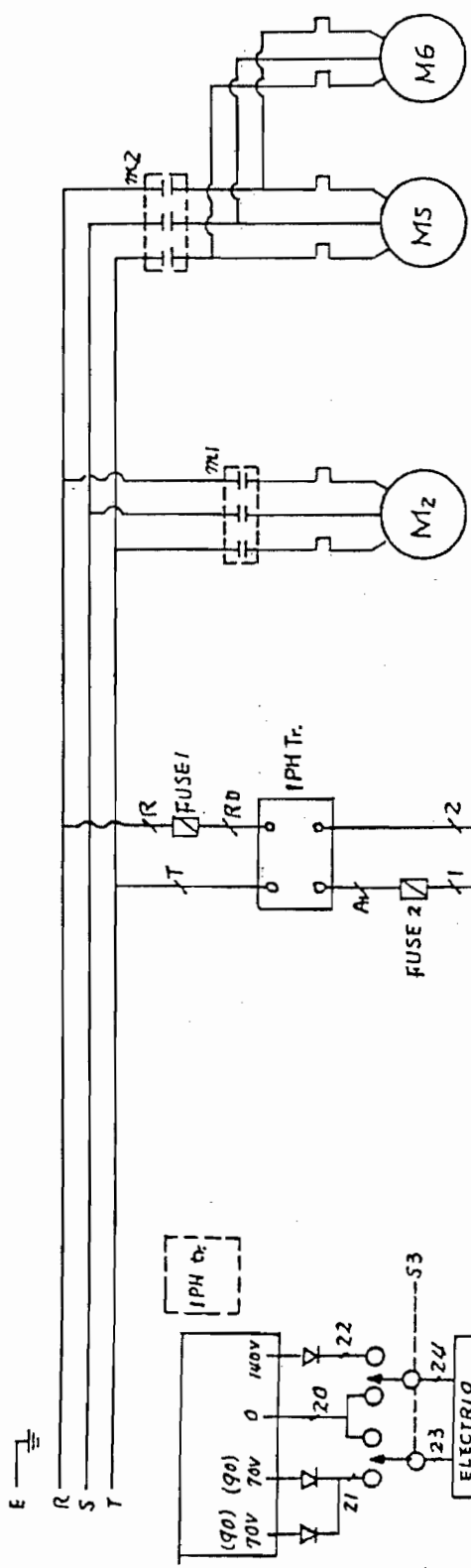
PL1	PILOT LAMP OF ALL POWER SOURCE
S3	SWITCH OF ELECTRO-MAGNETIC CHUCK
PB1-1	PUSH BUTTON "ON" OF SPINDLE MOTOR WITH INDICATIVE LAMP
PB1-2	PUSH BUTTON "OFF" OF SPINDLE MOTOR
PB2-1	PUSH BUTTON "ON" OF COOLANT OR DUST-SUCTION WITH INDICATIVE LAMP
PB2-2	PUSH BUTTON "OFF" OF COOLANT OR DUST-SUCTION
M2	SPINDLE MOTOR
M5,M6	COOLANT PUMP OR DUST-SUCTION MOTOR
m1	MAGNETIC CONTACTOR OF SPINDLE MOTOR
m2	MAGNETIC CONTACTOR OF COOLANT OR DUST-SUCTION
OL1	OVERLOAD RELAY
OL2	
1PH	1PH TRANSFORMER FOR CONTROL CIRCUIT AND POWER
tr.	OF ELECTRO-MAGNETIC CHUCK

# 618 SERIES CIRCUIT DIAGRAM AGS 200



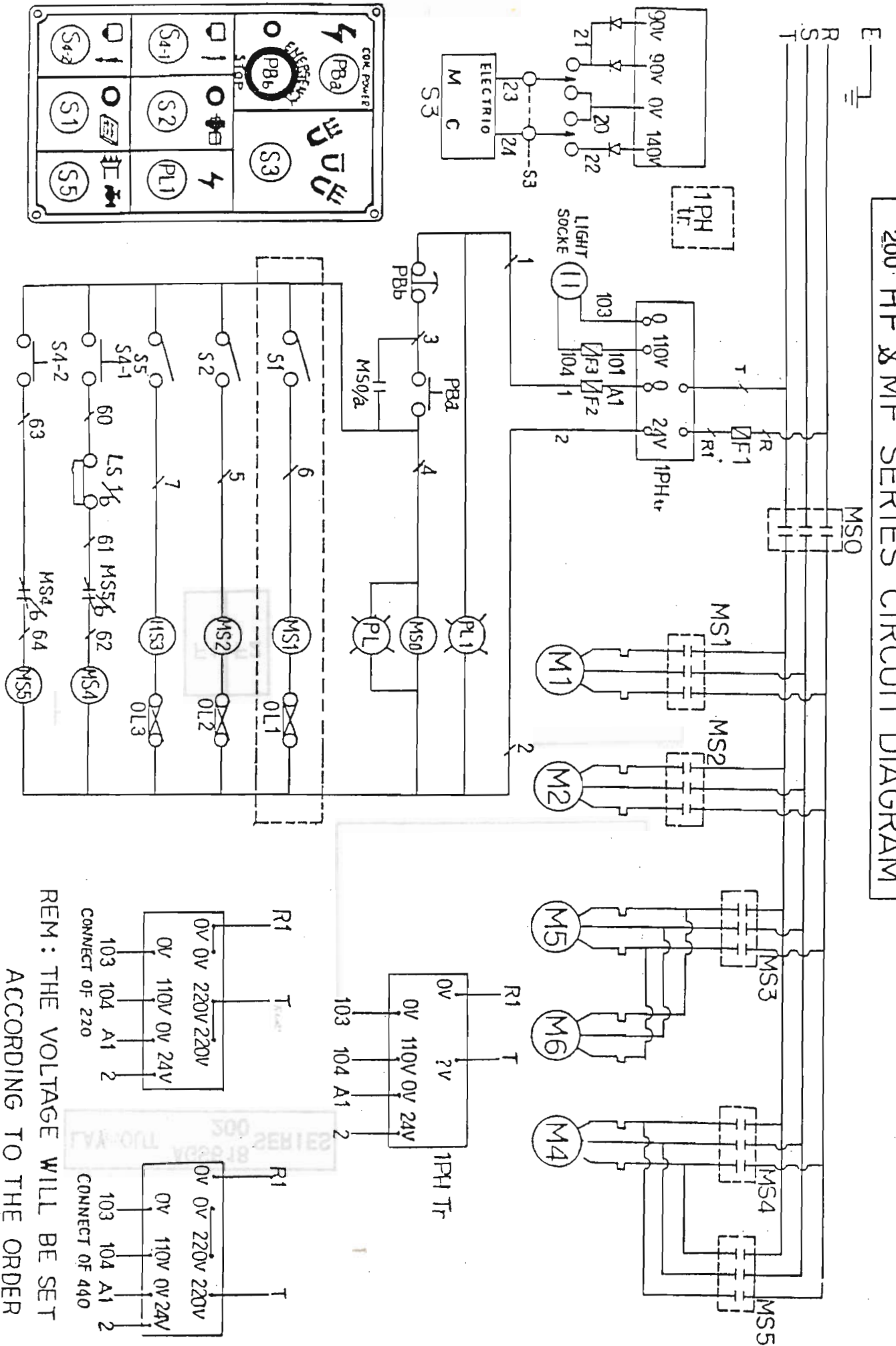
CONNECT OF 220V  
CONNECT OF 440V

REM: THE VOLTAGE WILL BE SET ACCORDING TO THE ORDER OF CUSTOMER



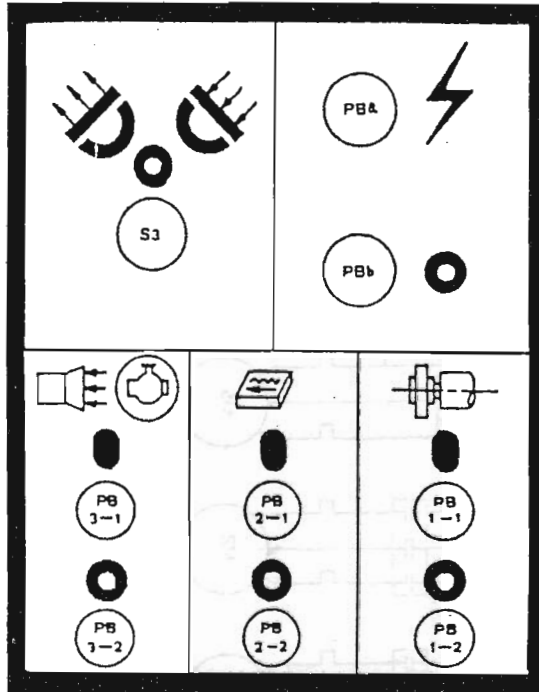


# 200 HF & MF SERIES CIRCUIT DIAGRAM



REM: THE VOLTAGE WILL BE SET ACCORDING TO THE ORDER OF CUSTOMER

Operation panel:

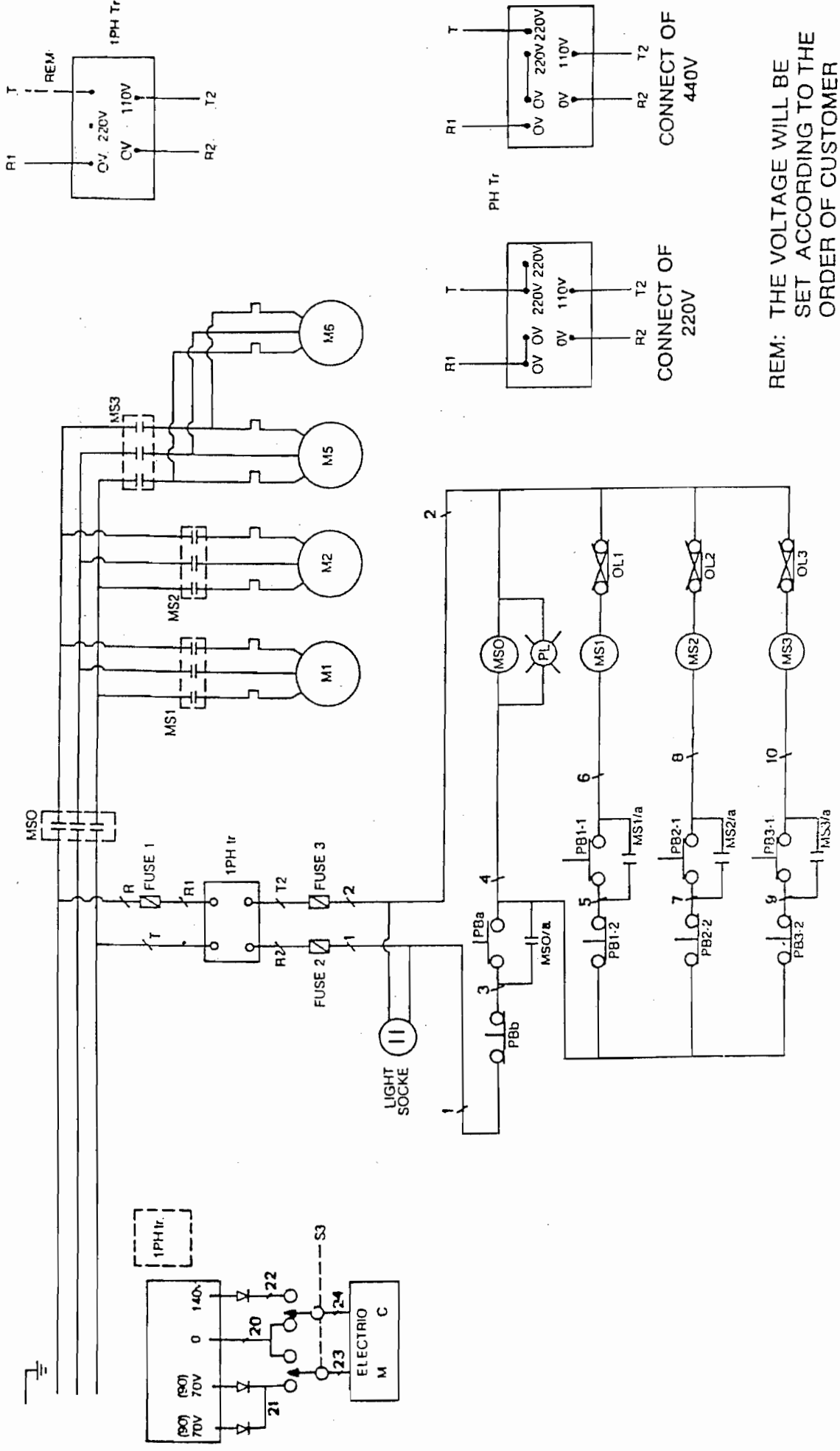


## DESCRIPTION OF FUNCTION

PBa	PUSH BUTTON "ON" OF POWER SOURCE WITH PILOT LAMP
PBb	PUSH BUTTON "OFF" OF POWER SOURCE
S3	SWITCH OF ELECTRO-MAGNETIC CHUCK
PB1-1	PUSH BUTTON "ON" OF SPINDLE MOTOR
PB1-2	PUSH BUTTON "OFF" OF SPINDLE MOTOR
PB2-1	PUSH BUTTON "ON" OF HYDRAULIC MOTOR
PB2-2	PUSH BUTTON "OFF" OF HYDRAULIC MOTOR
PB3-1	PUSH BUTTON "ON" OF COOLANT OR DUST-SUCTION
PB3-2	PUSH BUTTON "OFF" OF COOLANT OR DUST-SUCTION
MS0	MAGNETIC CONTACTOR OF CIRCUIT POWER
MS1	MAGNETIC CONTACTOR OF HYDRAULIC MOTOR
MS2	MAGNETIC CONTACTOR OF SPINDLE MOTOR
MS3	MAGNETIC CONTACTOR OF COOLANT OR DUST-SUCTION
M1	HYDRAULIC MOTOR
M2	SPINDLE MOTOR
M5-M6	COOLANT PUMP OR DUST-SUCTION MOTOR
OL1 OL2 OL3	OVER LOAD RELAY
1PH tr.	1PH TRANSFORMER FOR CONTROL CIRCUIT AND POWER OF ELECTRO-MAGNETIC CHUCK

# 14. ELECTRIC DIAGRAM AND LAY OUT

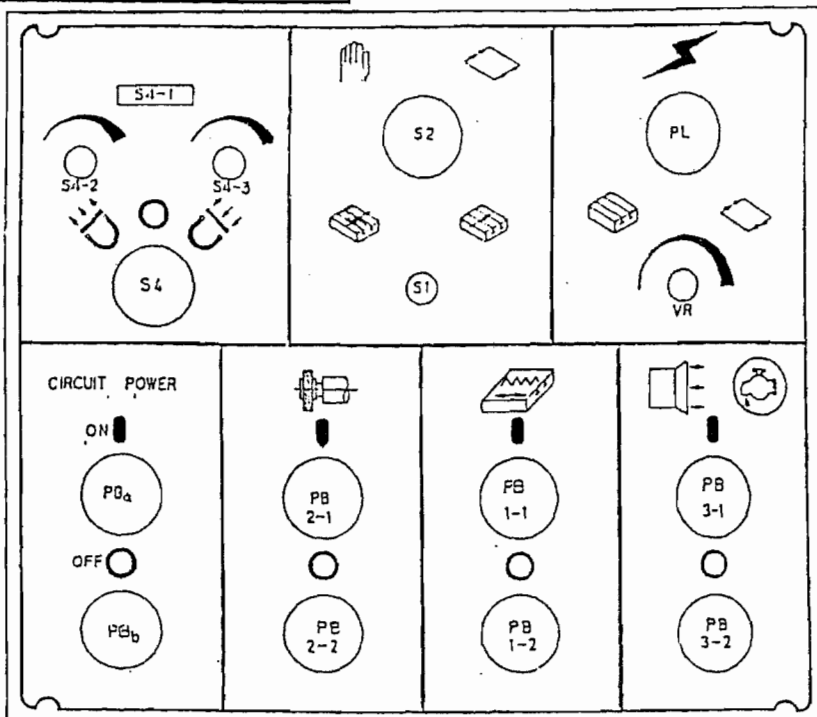
## H SERIES CIRCUIT DIAGRAM







# 1020AH, 1224AH LAY OUT

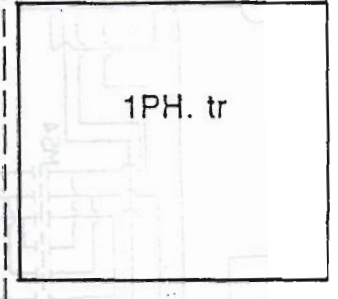
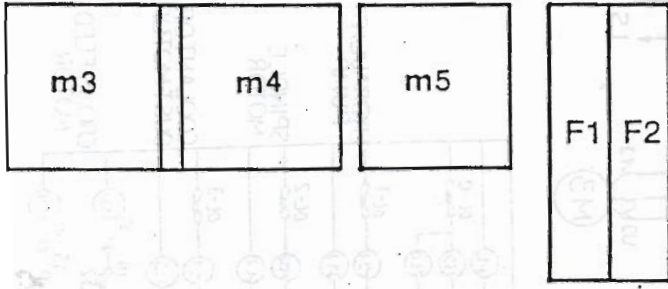
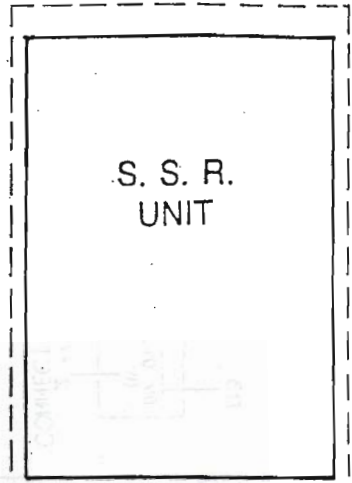
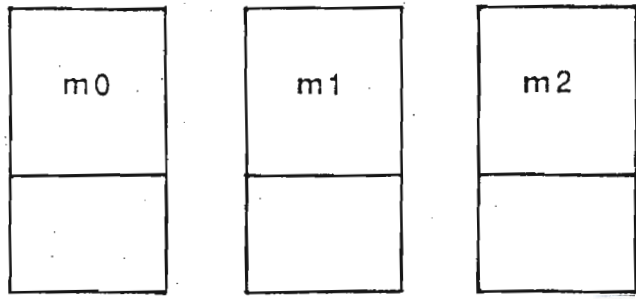
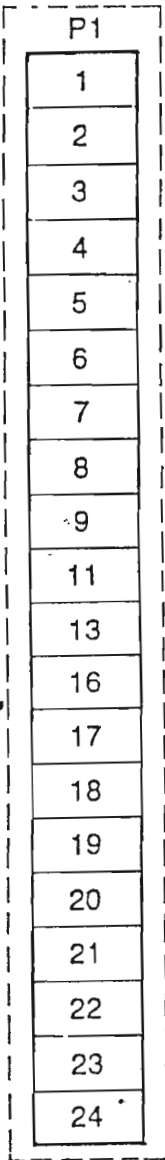


## ELECTRIC PARTS LIST

PL	PILOT INDICATE LAMP OF POWER SOURCE
PBa	PUSH BUTTON "ON" OF POWER SOURCE WITH PILOT LAMP
PBb	PUSH BUTTON "OFF" OF POWER SOURCE
S1	SWITCH OF CROSS-FEED
S2	SWITCH OF AUTO OR MANU CROSS-FEED
VR	VARIABLE SPEED OF AUTO CROSS-FEED
S4	SWITCH OF ELECTRO-MAGNETIC CHUCK
S4-1	LED DISPLAY SHOW THE CAPACITY OF MAGNETIC
S4-2	ADJUSTABLE SWITCH OF TIME OF DEMAGNETIZE
S4-3	ADJUSTABLE SWITCH OF MAGNETIC CAPACITY
PB1-1	PUSH BUTTON "ON" OF SPINDLE MOTOR WITH PILOT LAMP
PB1-2	PUSH BUTTON "OFF" OF SPINDLE MOTOR
PB2-1	PUSH BUTTON "ON" OF HYDRAULIC MOTOR WITH PILOT LAMP
PB2-2	PUSH BUTTON "OFF" OF HYDRAULIC MOTOR
PB3-1	PUSH BUTTON "ON" OF COOLANT OR DUST-SUCTION WITH PILOT LAMP
PB3-2	PUSH BUTTON "OFF" OF COOLANT OR DUST-SUCTION
MS0	MAGNETIC CONTACTOR OF CIRCUIT CONTROL POWER
MS1	MAGNETIC CONTACTOR OF HYDRAULIC MOTOR
MS2	MAGNETIC CONTACTOR OF SPINDLE MOTOR
MS3	MAGNETIC CONTACTOR OF CROSS-FEED MOTOR
MS4	
MS5	MAGNETIC CONTACTOR OF COOLANT OR DUST-SUCTION
M1	HYDRAULIC PUMP MOTOR
M2	SPINDLE MOTOR
M3	CROSS-FEED MOTOR
M4	COOLANT PUMP OR DUST-SUCTION MOTOR
M5	RAPID UP OR DOWN TRAVERSE MOTOR
LS1	LIMITED SWITCH FOR STROKING CROSS-FEED
LS2	LIMITED SWITCH FOR MAX. STROKE CONTROL OF CROSS-FEED
LS3	
LS4	LIMITED SWITCH FOR ADJUSTABLE STROKE CONTROL OF AUTO CROSS-FEED
LS5	
OL-1	OVER LOAD THERMAL RELAY OF HYDRAULIC PUMP MOTOR
OL-2	OVER LOAD THERMAL RELAY OF SPINDLE MOTOR
OL-0	OVER LOAD THERMAL RELAY OF CIRCUIT CONTROL (OR CROSS-FEED MOTOR)
1Ph.Tr.	1Ph TRANSFORMER FOR CONTROL CIRCUIT AND POWER OF ELE-MAGN CHUCK
3Ph.Tr.	3Ph TRANSFORMER FOR CROSS-FEED & RAPID UP OR DOWN TRAVERSE MOTOR
SSR UNIT	ELECTRIC EQUIPMENT FOR CONTROLLING CROSS-FEED MOTOR
MCC	ELECTRO-MAGNETIC CHUCK CONTROLLER



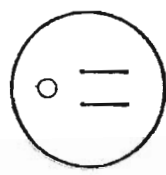
# LAY OUT (AH SERIES)



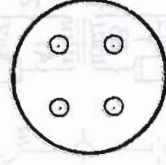
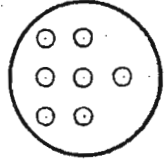
\* PART 2

\* PART 1

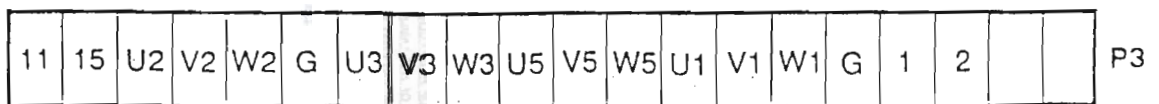
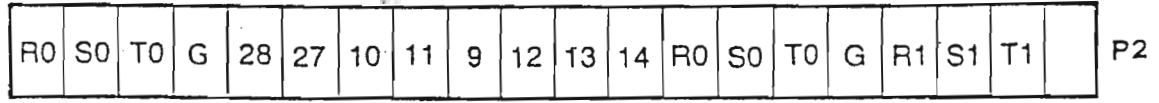
COOLANT  
OR  
DUST-SUCTION  
SOCKET



LIGHT  
SOCKET

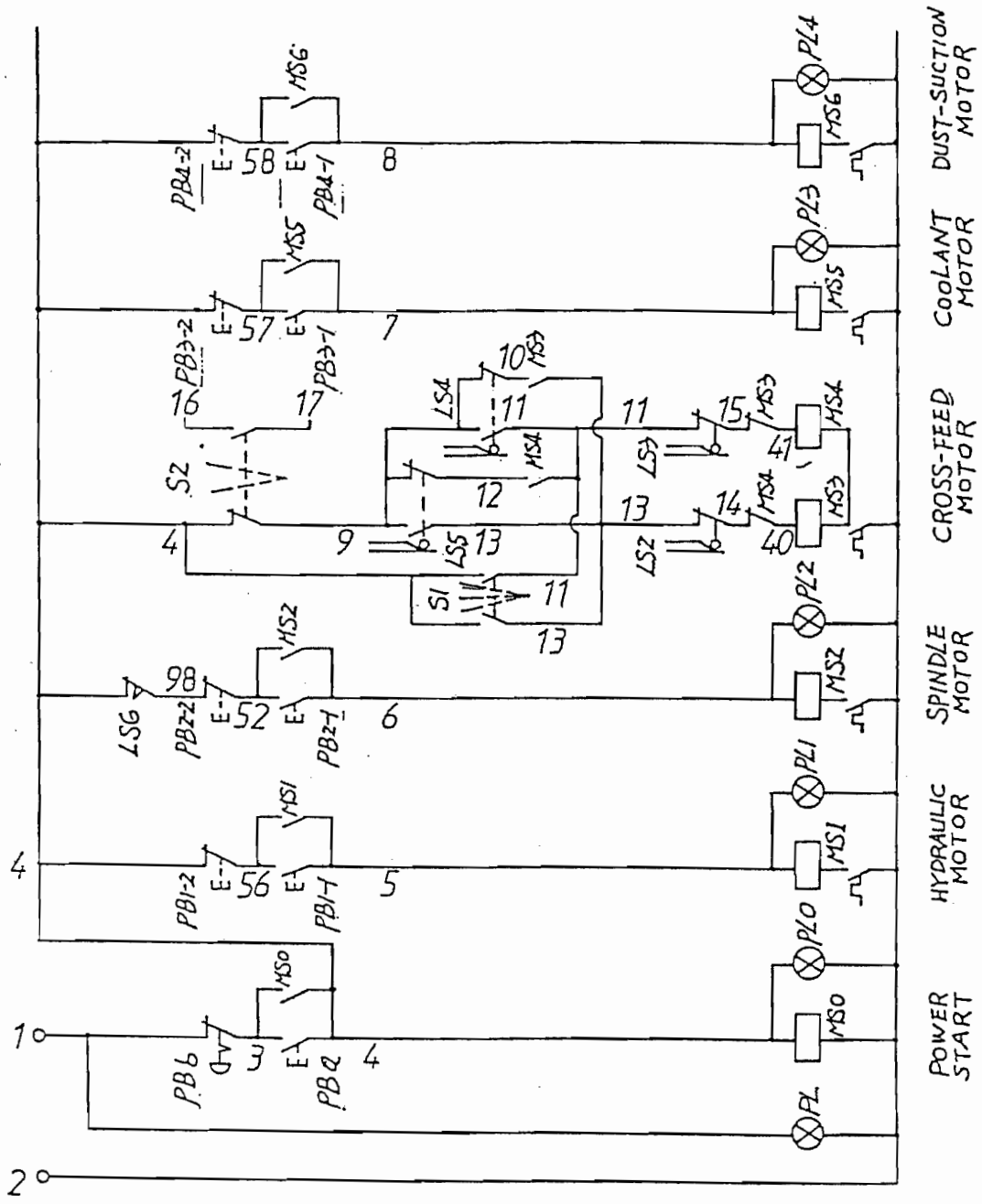


HYDRULIC  
PUMP SOCKET



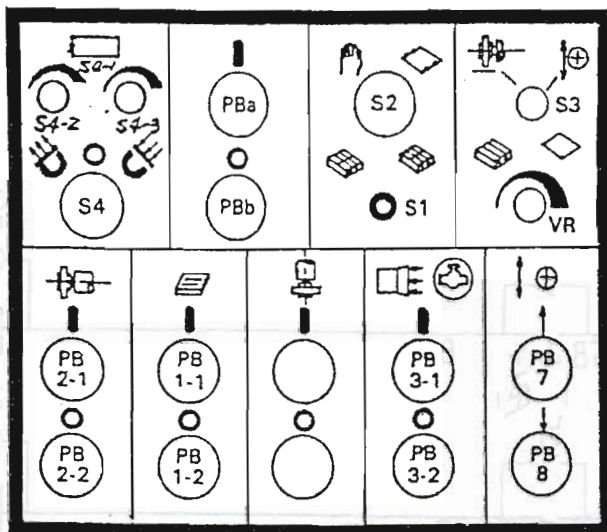
\* IF THE MODEL IS 1224 SERIES, THE POSITION OF PART 1 & PART 2 WILL BE REVERSED FROM EACH OTHER.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15



1020AH 1224AH

CONTROL PANEL

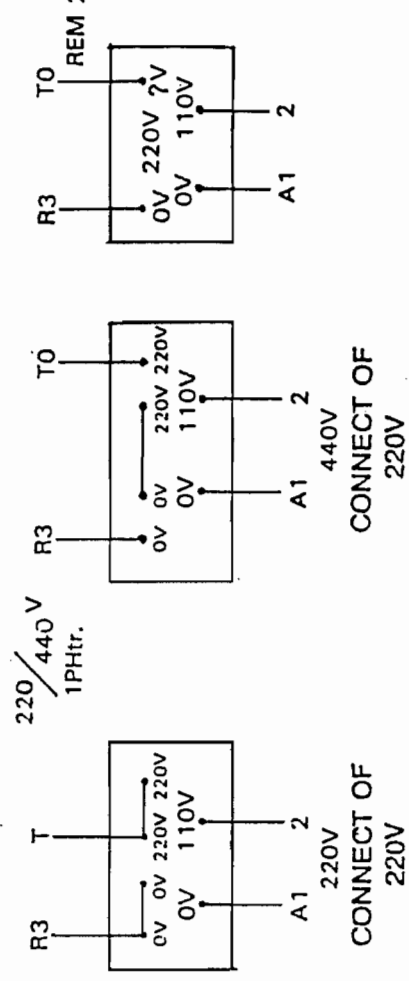
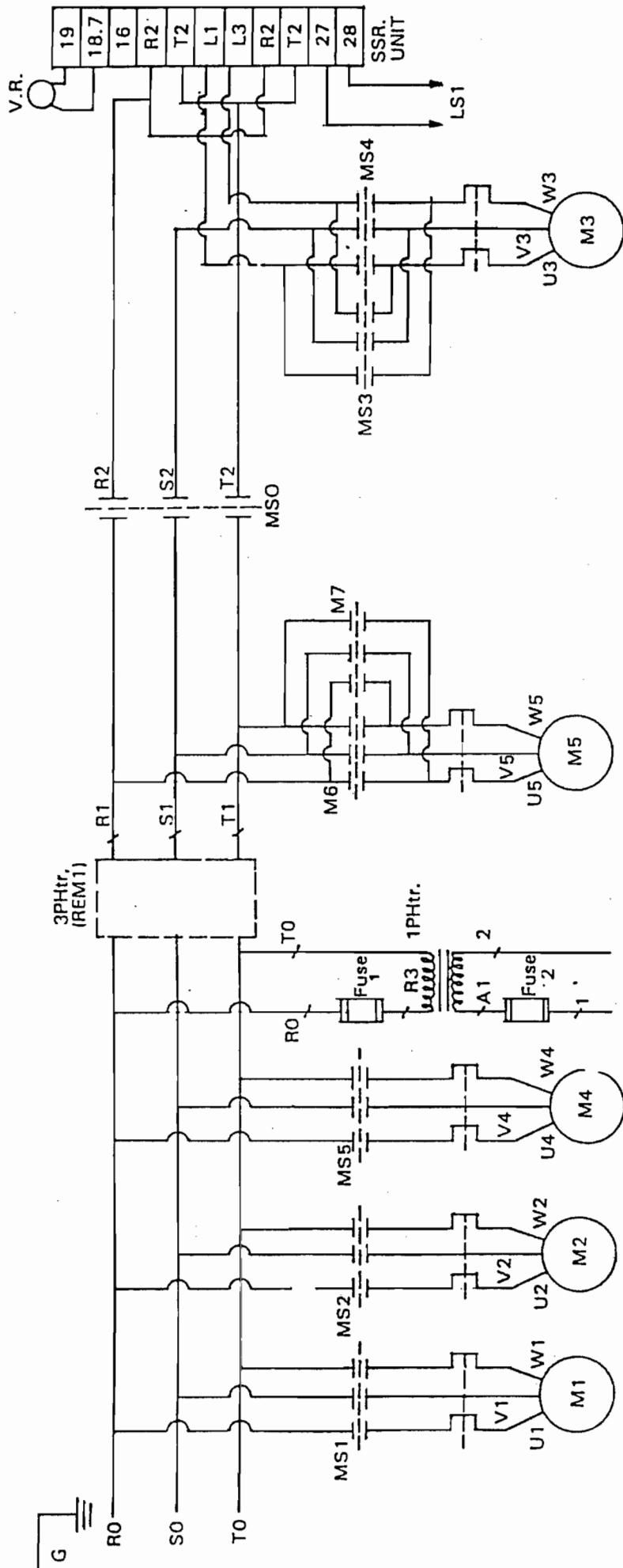


DESCRIPTION OF FUNCTION

PIL	PILOT INDICATE LAMP OF POWER SOURCE
PBa	PUSH BUTTON "ON" OF POWER OF CIRCUIT CONTROL SOURCE WITH PILOT LAMP
PBb	PUSH BUTTON "OFF" OF POWER SOURCE
S1	SWITCH OF CROSS-FEED
S2	SWITCH OF AUTO OR MANU CROSS-FEED
S3	SWITCH OF SELECTING (REM) OF GRINDING ACTIVITY OR UP-down TRAVERSE
S4	SWITCH OF ELECTRO-MAGNETIC CHUCK
VR	VARIABLE SPEED OF AUTO CROSS-FEED
PB1-1	PUSH BUTTON "ON" OF SPINDLE MOTOR WITH PILOT LAMP
PB1-2	PUSH BUTTON "OFF" OF SPINDLE MOTER
PB2-1	PUSH BUTTON "ON" OF HYDRAULIC MOTOR WITH PILOT LAMP
PB2-2	PUSH BUTTON "OFF" OF HYDRAULIC MOTOR
PB3-1	PUSH BUTTON "ON" OF COOLANT OR DUST-SUCTION WITH PILOT LAMP
PB3-2	PUSH BUTTON "OFF" OF COOLANT OR DUST-SUCTION
PB7	PUSH BUTTON OF WHEEL HEAD RAPID UP FEED (WHEN S3 CHIOSE ⊕, THE SWITCH IS WORKABLE.)
PB8	PUSH BUTTON OF WHEEL HEAD RAPID DOWN FEED (WHEN S3 CHIOSE ⊖, THE SWITCH IS WORKABLE.)
MS0	MAGNETIC CONTACTOR OF CIRCUIT CONTROL POWER
MS1	MAGNETIC CONTACTOR OF HYDRAULIC MOTOR
MS2	MAGNETIC CONTACTOR OF SPINDLE MOTOR
MS3	MAGNETIC CONTACTOR OF CROSS-FEED MOTOR
MS4	
MS5	MAGNETIC CONTACTOR OF COOLANT OR DUST-SUCTION
MS6	MAGNETIC CONTACTOR OF RAPID UP-DOWN TRAVERSE
MS7	MOTOR
M1	HYDRAULIC PUMP MOTOR
M2	SPINDLE MOTOR
M3	CROSS-FEED MOTOR
M4	COOLANT PUMP OR DUST-SUCTION MOTOR
M5	RAPID UP-DOWN TRAVERSE MOTOR
LS1	LIMITED SWITCH FOR STROKING CROSS-FEED
LS2	LIMITED SWITCH FOR MAX STROKE CONTROL OF CROSS-FEED
LS3	
LS4	LIMITED SWITCH FOR ADJUSTABLE STROKE
LS5	CONTROL OF AUTO CROSS-FEED
OL1	
OL2	OVERLOAD RELAY
OL3	
1PH	1PH TRANSFORMER FOR CONTROL CIRCUIT AND POWER
tr.	OF ELECTRO-MAGNETIC CHUCK
3PH	3PH TRANSFORMER FOR CROSS-FEED & RAPID UP-DOWN TRAVERSE
tr.	MOTOR (IF POWER SUPPLY IS ONLY 220V TYPE THIS 3PH tr WILL BE OMITTED)

\* REM: IF S3 IS SELECTED ⊕MODE THEN ALL OF PUSH BUTTONS (1-3) WILL NOT WORK EXCEPT PB7&PB8

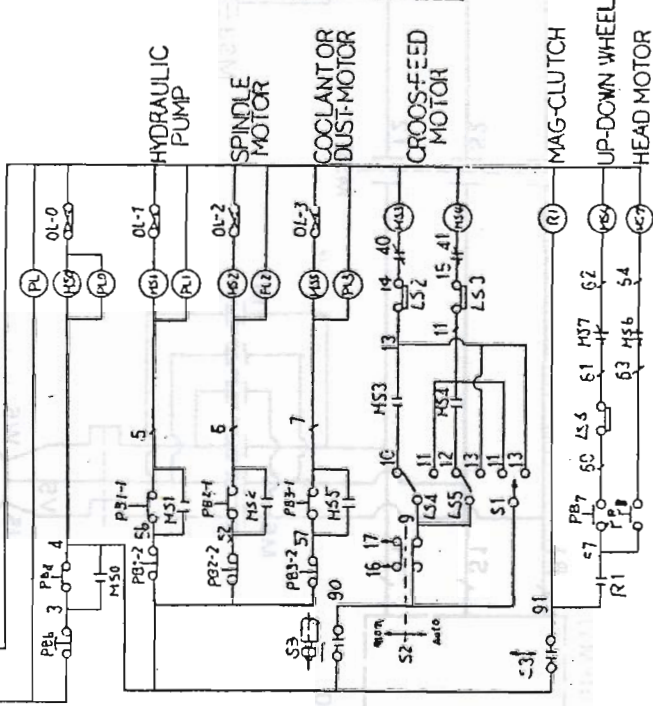
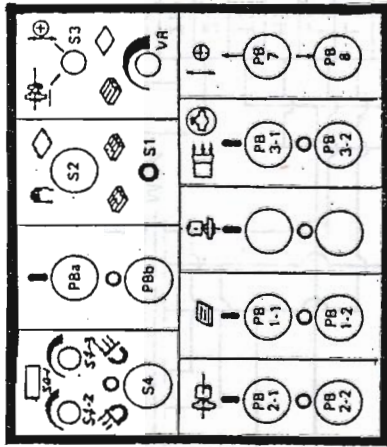
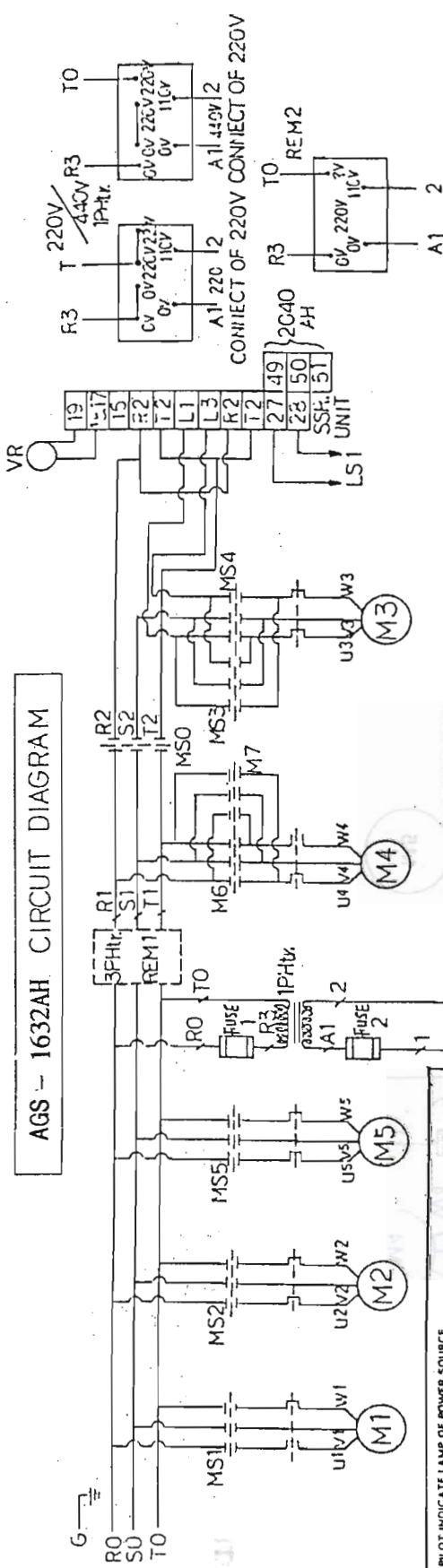
# 1632 AH SERIES ELECTRIC CIRCUIT OF MOTOR CONTROL



**REM1: THIS 3PH tr WILL BE OMITTED  
 IF POWER SUPPLY IS ONLY 220V TYPE**  
**REM2: THE VOLTAGE WILL BE  
 SET ACCORDING TO THE  
 ORDER OF CUSTOMER**



# AGS - 1632AH CIRCUIT DIAGRAM



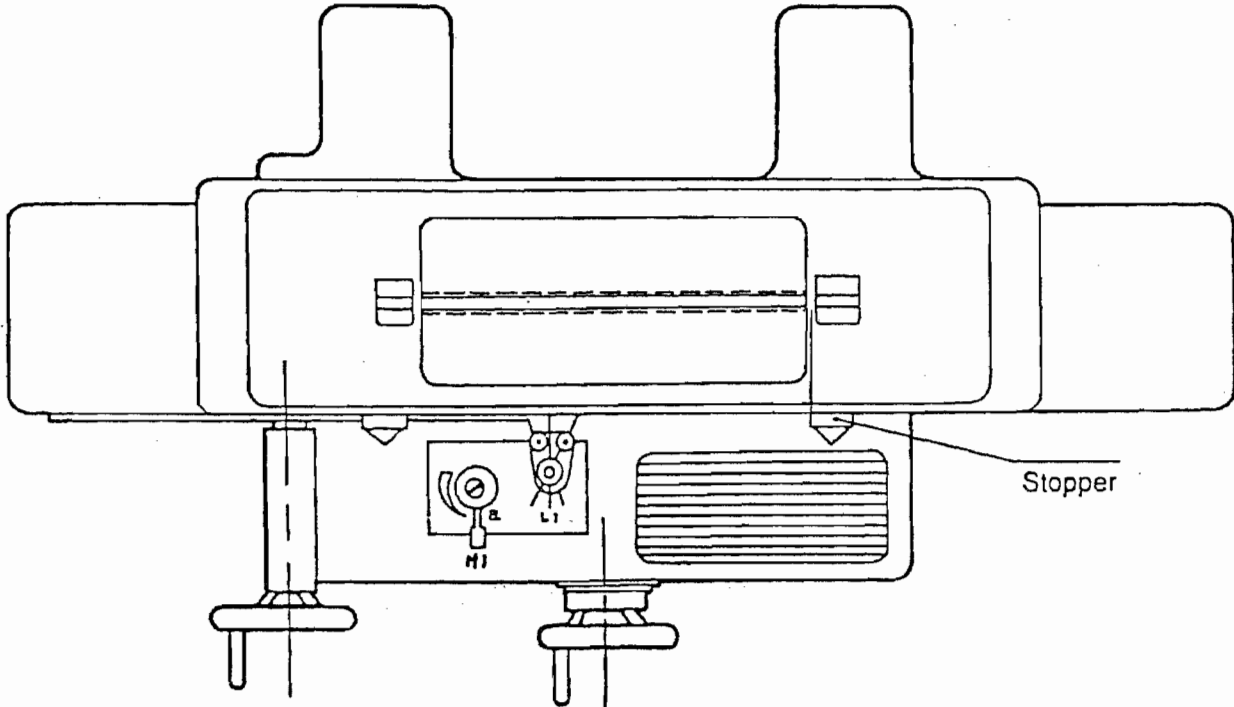
PIL	PILOT INDICATE LAMP OF POWER SOURCE
PB8	PUSH BUTTON "ON" OF POWER OF CIRCUIT CONTROL SOURCE WITH PILOT LAMP
PB6	PUSH BUTTON "OFF" OF POWER SOURCE
S1	SWITCH OF CROSS-FEED
S2	SWITCH OF AUTO OR MANU CROSS-FEED
S3	SWITCH OF SELECTING (REM) OF GRINDING ACTIVITY OR UP-DOWN TRAVERSE
S4	SWITCH OF ELECTRO-MAGNETIC CHUCK
VA	VARIABLE SPEED OF AUTO CROSS-FEED
PB1-1	PUSH BUTTON "ON" OF SPINDLE MOTOR WITH PILOT LAMP
PB1-2	PUSH BUTTON "OFF" OF SPINDLE MOTOR
PB2-1	PUSH BUTTON "ON" OF HYDRAULIC MOTOR WITH PILOT LAMP
PB2-2	PUSH BUTTON "OFF" OF HYDRAULIC MOTOR
PB3-1	PUSH BUTTON "ON" OF COOLANT OR DUST-SUCTION WITH PILOT LAMP
PB3-2	PUSH BUTTON "OFF" OF COOLANT OR DUST-SUCTION (IF THE SWITCH IS WORKABLE)
PB7	PUSH BUTTON OF WHEEL HEAD RAPID UP FEED WHEN S3 CHOSE (IF THE SWITCH IS WORKABLE)
PB8	PUSH BUTTON OF WHEEL HEAD RAPID DOWN FEED (WHEN S3 CHOSE (IF THE SWITCH IS WORKABLE))
MS0	MAGNETIC CONTACTOR OF CIRCUIT CONTROL POWER
MS1	MAGNETIC CONTACTOR OF HYDRAULIC MOTOR
MS2	MAGNETIC CONTACTOR OF SPINDLE MOTOR
MS3	MAGNETIC CONTACTOR OF CROSS-FEED MOTOR
MS4	MAGNETIC CONTACTOR OF COOLANT OR DUST-SUCTION
MS5	MAGNETIC CONTACTOR OF RAPID UP-DOWN TRAVERSE MOTOR
MS7	HYDRAULIC PUMP MOTOR
M1	SPINDLE MOTOR
M2	CROSS-FEED MOTOR
M3	COOLANT PUMP OR DUST-SUCTION MOTOR
M4	RAPID-UP-DOWN TRAVERSE MOTOR
LS1	LIMITED SWITCH FOR STRONG CROSS-FEED
LS2	LIMITED SWITCH FOR MAX STROKE CONTROL OF CROSS-FEED
LS3	LIMITED SWITCH FOR ADJUSTABLE STROKE CONTROL OF AUTO CROSS-FEED
LS4	OVERLOAD RELAY
OL1	1PH TRANSFORMER FOR CONTROL CIRCUIT AND POWER
OL2	OF ELECTRO-MAGNETIC CHUCK
OL3	3PH TRANSFORMER FOR CROSS-FEED & RAPID UP-DOWN TRAVERSE MOTOR IF POWER SUPPLY IS ONLY 220V TYPE THIS 3PH V WILL BE OMITTED



# OPERATION (AH)

(A) Please pay best attention to the following instruction before operate the machine:





1. The machine must be located on the vibration-proof ground.
2. Installation and levelling of the machine.
3. Lubrication.
4. The hydraulic tank must have adequate oil.
5. Lever "H1" of the hydraulic table traverse must be parallel to the crossfeed direction "a" (Ref. to drawing below).
6. Before starting the spindle motor, please do not install the wheel until you ensure it rotates at clockwise direction.



(B) Table Longitudinal Movement ( AGS 1020H & AH Series)

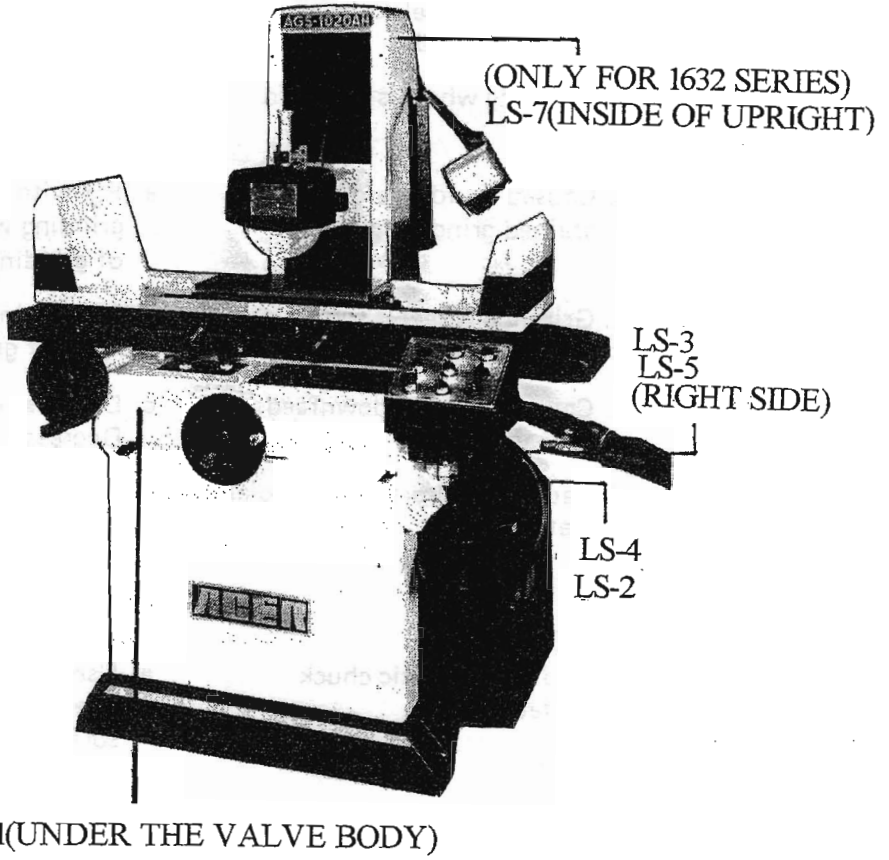
1. Switch on S2 for starting the hydraulic pump motor.
2. Turn the lever "H1" clockwise until the table starts slowly.
3. If the table unable to travel automatically, you can rotate an anti-direction "b.c." by hand, in this case; You can check the neutral point and set the right position "L1".

(C) Table crossfeed Movement (SGS-AH Series)

1. Switch S5 in position  = Manuel
2. Switch S5 in position  = Automatic  
Turn. Switch S4 in position  then sliding seat move away from the operator  
Switch S4 in position  then sliding seat move against the operator
3. The cross-traverse distance is controlled by the switch on the left side of the machine base.
4. Before starting the automatic feed, switch on S5 automatic position, then switch on S4 for backward or forward according to your need, and start automatic feed the amount of which is infinitely variable by the regulation knob "VR".
5. If after switch on S5 and S4, crossfeed unable to work, (or one of the switch is out of order). it means the switch below L1 is in wrong position and unable to contact the cam. In this case, adjustment is necessary.

# DISTRIBUTIVE DIAGRAM OF LIMITED SWITCHES

\* ONLY FOR AH SERIES



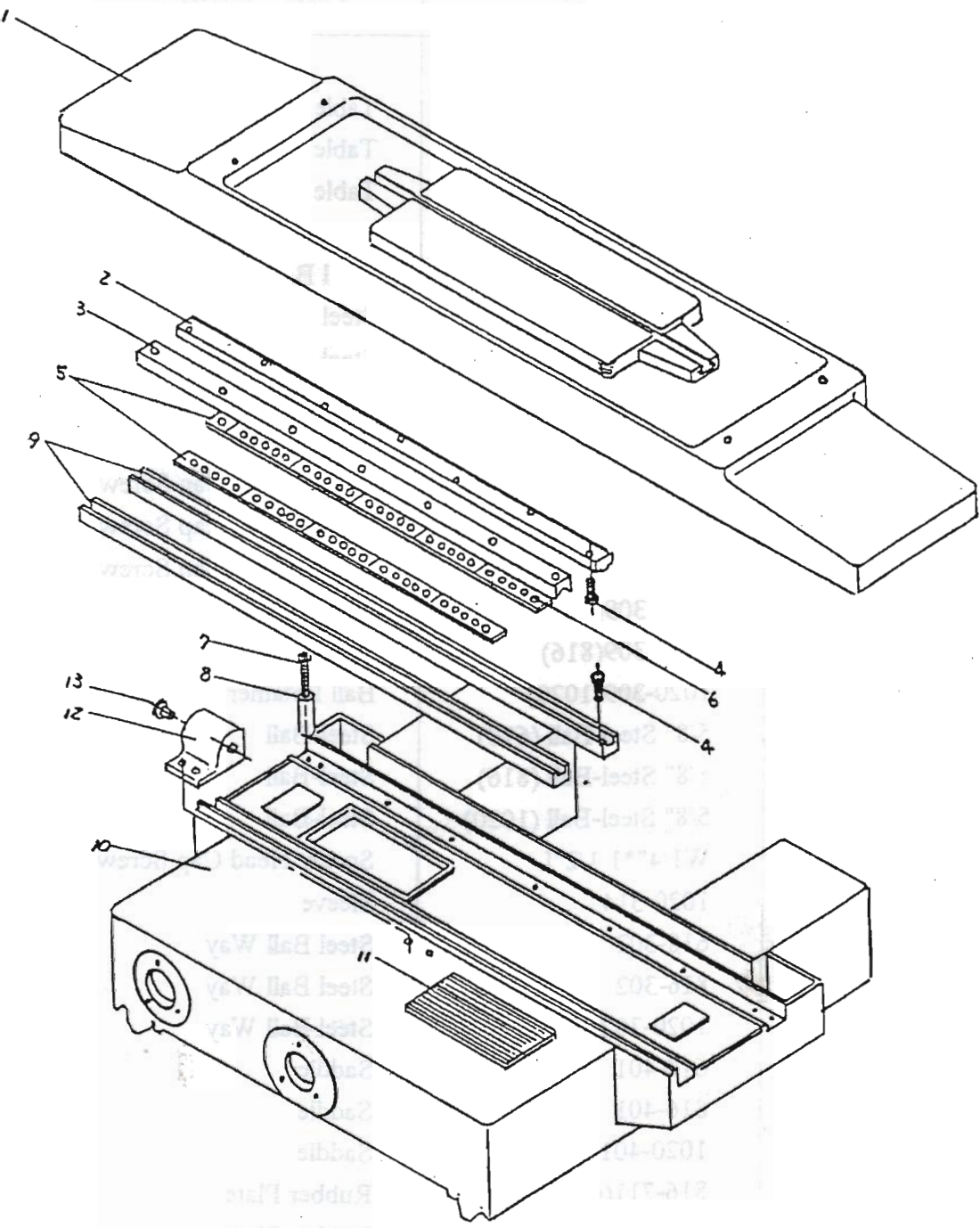
# 15. GRINDING BUGS AND ELIMINATIONS

## Grinding Bugs and Eliminations.

<u>Bugs style.</u>	<u>Reason</u>	<u>Corrective methods</u>
Vibrative waves	<ul style="list-style-type: none"> <li>a. Vibration.</li> <li>b. Grinding wheel surface loses its round.</li> <li>c. Grinding wheel is too hard</li> </ul>	<ul style="list-style-type: none"> <li>a. Keep machine in best condition and balance the grinding wheel certainly.</li> <li>b. Use sharp grinding wheel to dress grinding wheel surface again.</li> <li>c. Increase working table speed and fix with right grinding wheel.</li> </ul>
Burn on grinding surface of processed material.	<ul style="list-style-type: none"> <li>a. Caused by too hard or tiny grained grinding wheel.</li> <li>b. Grinding wheel is too blunt or coated with dusts.</li> <li>c. Caused by large downfeed capacity.</li> <li>d. Caused by shortage of coolant water.</li> </ul>	<ul style="list-style-type: none"> <li>a. Fix with softer or rougher grained grinding wheel, or decreased line speed of grinding wheel.</li> <li>b. Dress grinding wheel until it has rougher grained degree.</li> <li>c. Decrease downfeed capacity Decrease crossfeed capacity.</li> <li>d. Increase the discharge of coolant water. Refill clean coolant water. Use stronger coolant effect mixture.</li> </ul>
Work piece lost parallel	<ul style="list-style-type: none"> <li>a. Bad on magnetic chuck surface.</li> <li>b. Precision of magnetic chuck surface is not good enough.</li> </ul>	<ul style="list-style-type: none"> <li>a. Use tiny grained grinding stone or oiled stone to polish the contact surface between magnetic chuck and work piece.</li> <li>b. Regrind magnetic chuck surface.</li> </ul>
Rough on glossy surface	<ul style="list-style-type: none"> <li>a. Feed is too much when you dress the grinding wheel.</li> <li>b. Caused by too big feed capacity in the final process.</li> </ul>	<ul style="list-style-type: none"> <li>a. Lightly dress by one or two times sparkingly dressing.</li> <li>b. Tiny feed and polish surface.</li> </ul>
Loading of grinding wheel	<ul style="list-style-type: none"> <li>a. Incorrect specification of grinding wheel.</li> <li>b. Inadequate coolant liquor.</li> <li>c. Working table speed is too low.</li> <li>d. Uncertainly dress of grinding wheel.</li> </ul>	<ul style="list-style-type: none"> <li>a. Use open style grinding wheel which has rougher grain and softer material.</li> <li>b. Guide coolant liquor to contact part and clean coolant liquor.</li> <li>c. Increase working table speed.</li> <li>d. Use sharp diamond dresser to adjust grinding wheel, rough grain is requested.</li> </ul>

# TABLE, SADDLE ASS'Y

(618,200)



# TABLE,SADDLE ASS'Y

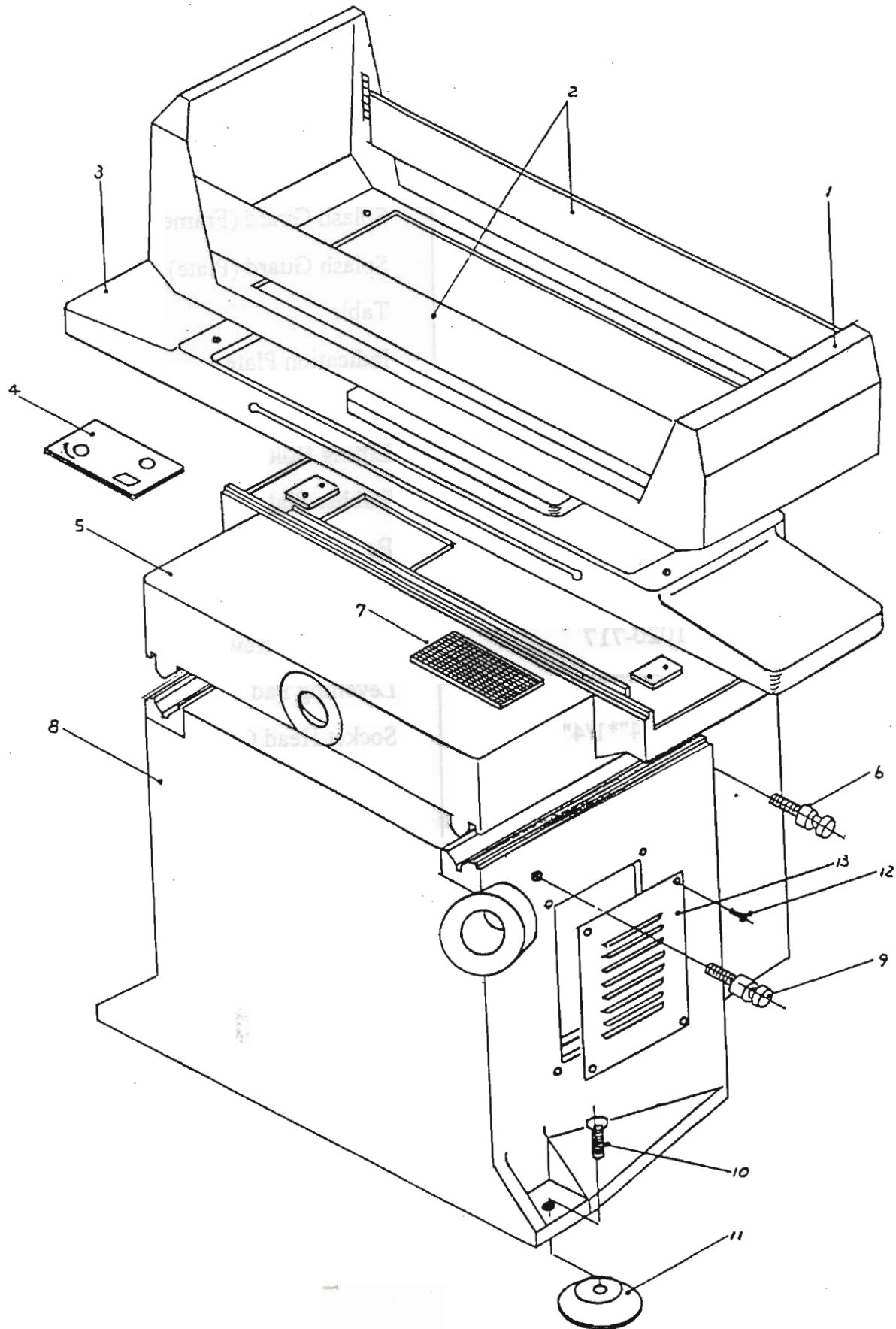
(618,200)

Index No.	Parts No.	Parts Name	Q'ty
1.	618-301	Table	1
	816-301	Table	1
	1020-301	Table	1
2.	618-303	Steel Ball Way	1
	816-303	Steel Ball Way	1
	1020-303	Steel Ball Way	1
3.	618-304	Steel Ball Way	1
	816-304)	Steel Ball Way	1
	1020-304	Steel Ball Way	1
4.	W1/4"*3/4"L(618)	Socket Head Cap Screw	32
	W1/4"*3/4"L(816)	Socket Head Cap Screw	26
	W1/4"*3/4"L(1020)	Socket Head Cap Screw	28
5.	1020-309(618)	Ball Retainer	9
	1020-309(816)	Ball Retainer	8
	1020-309(1020)	Ball Retainer	11
6.	5/8" Steel-Ball (618)	Steel-Ball	43
	5/8" Steel-Ball (816)	Steel-Ball	39
	5/8" Steel-Ball (1020)	Steel-Ball	51
7.	W1/4"*1 1/2"L	Socket Head Cap Screw	4
8.	1020-314	Sleeve	4
9.	618-302	Steel Ball Way	2
	816-302	Steel Ball Way	2
	1020-302	Steel Ball Way	2
10.	618-401	Saddle	1
	816-401	Saddle	1
	1020-401	Saddle	1
11.	816-711(618,816)	Rubber Plate	1
	1020-711	Rubber Plate	1
12.	1020-315	Stroke Seat For L.&R.	1
13.	1020-316	Rubber Stop For L.&R.	2



# TABLE, SADDLE & BASE ASS'Y

(200H, 1020, 1224)



# TABLE,SADDLE&BASE ASS'Y

(200H)

Index No.	Parts No.	Parts Name	Q'ty
1.	816-308	Splash Guard (Frame)	1
2.	816-308	Splash Guard (Plate)	4
3.	816-301	Table	1
4.	1020-725	Indication Plate	1
5.	816-401	Saddle	1
6.	1020-703	Lifting Bolt	1
7.	1020-711	Rubber Plate	1
8.	816-501	Base	1
9.	1020-704	Lifting Bolt	1
10.	1020-717	Levelling Screw	3
11.	1020-716	Levelling Pad	3
12.	W1/4"*1/4"	Socket Head Cap Screw	8
13.	1020-710	Side Cover	2

**TABLE,SADDLE&BASE ASS'Y**  
(1020 SERIES )

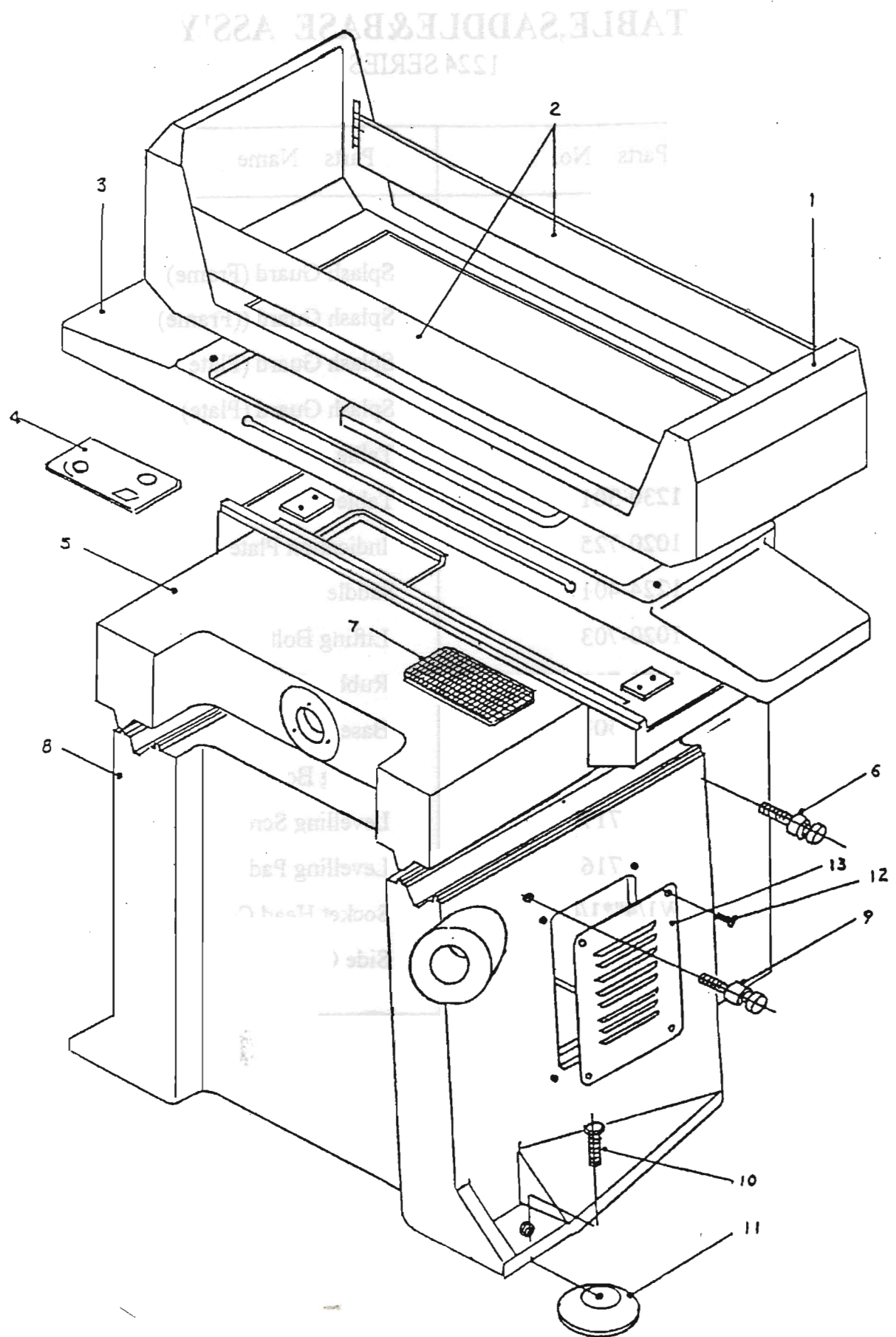
Index No.	Parts No.	Parts Name	Q'ty
1.	1020-308	Splash Guard (Frame)	1
2.	1020-308	Splash Guard (Plate)	4
3.	1020-301	Table	1
4.	1020-725	Indication Plate	1
5.	1020-401	Saddle	1
6.	1020-703	Lifting Bolt	1
7.	1020-711	Rubber Plate	1
8.	1020-501	Base	1
9.	1020-704	Lifting Bolt	1
10.	1020-717	Levelling Screw	3
11.	1020-716	Levelling Pad	3
12.	W1/4"*1/4"	Socket Head Cap Screw	8
13.	1020-710	Side Cover	2

# TABLE, SADDLE & BASE ASS'Y

( 1224 SERIES )

Index No.	Parts No.	Parts Name	Q'ty
1.	1224-308	Splash Guard (Frame)	1
2.	1224-308	Splash Guard (Plate)	4
3.	N1224-301	Table	1
4.	1020-725	Indication Plate	1
5.	N1224-401	Saddle	1
6.	1020-703	Lifting Bolt	1
7.	1020-711	Rubber Plate	1
8.	N1224-501	Base	1
9.	1020-704	Lifting Bolt	1
10.	1020-717	Levelling Screw	3
11.	1020-716	Levelling Pad	3
12.	W1/4"*1/4"	Socket Head Cap Screw	8
13.	1020-710	Side Cover	2

# TABLE, SADDLE & BASE ASS'Y (1224, 1632 SERIES)



# TABLE,SADDLE&BASE ASS'Y

(1224 SERIES )

Index No.	Parts No.	Parts Name	Qty
1.	1224-308	Splash Guard (Frame)	1
	1230-308	Splash Guard ((Frame)	4
2.	1224-308	Splash Guard (Plate)	4
	1230-308	Splash Guard (Plate)	4
3.	1224-301	Table	1
	1230-301	Table	1
4.	1020-725	Indication Plate	1
5.	1224-401	Saddle	1
6.	1020-703	Lifting Bolt	1
7.	1020-711	Rubber Plate	1
8.	1224-501	Base	1
9.	1020-704	Lifting Bolt	1
10.	1020-717	Levelling Screw	5
11.	1020-716	Levelling Pad	5
12.	W1/4"*1/4"	Socket Head Cap Screw	8
13.	1020-710	Side Cover	2

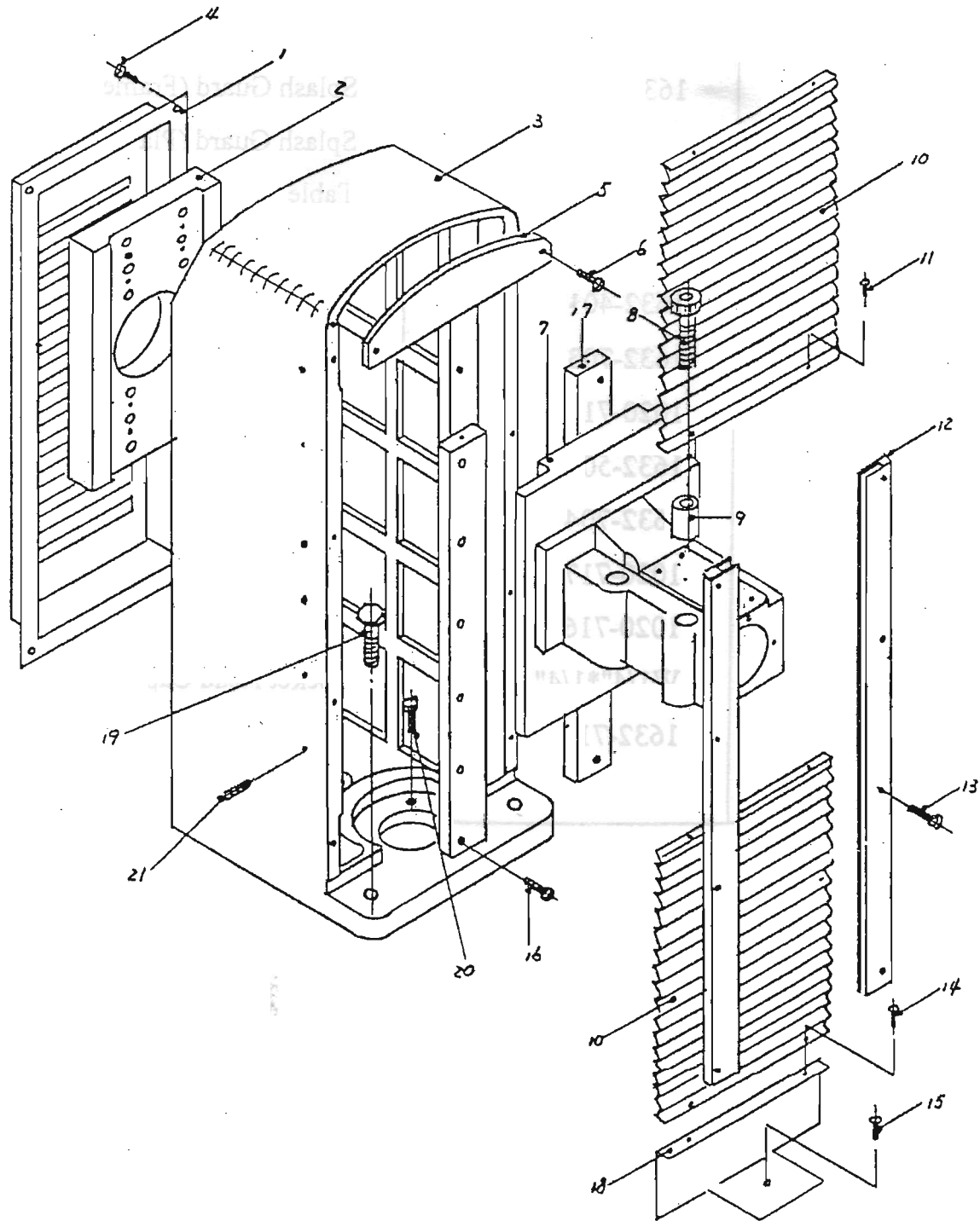
# TABLE, SADDLE & BASE ASS'Y (1632 SERIES)

Index No.	Parts No.	Parts Name	Q'ty
1.	1632-308	Splash Guard (Frame)	1
2.	1632-308	Splash Guard (Plate)	4
3.	1632-301	Table	1
4.	1020-725	Indication Plate	1
5.	1632-401	Saddle	1
6.	1632-703	Lifting Bolt	2
7.	1020-711	Rubber Plate	1
8.	1632-501	Base	1
9.	1632-704	Lifting Bolt	2
10.	1020-717	Levelling Screw	5
11.	1020-716	Levelling Pad	5
12.	W1/4"*1/4"	Socket Head Cap Screw	8
13.	1632-710	Side Cover	2



# COLUMN ASS'Y

(618, 200, 1020, 1224, SERIES)



# COLUMN ASS'Y

(618,200)

Index No.	Parts No.	Parts Name	Qty
1.	816-205	Column Rear Cover	1
2.	618-102	Head B	1
	816-102	Head B	1
3.	816-201	Column	1
4.	W1/4"*1/4"L	Round Head Screw	6
5.	816-204	Upper Cover Of Column	1
6.	W1/4"*3/4"L	Socket Head Cap Screw	2
7.	618-101	Head A (618 serial)	1
	816-101	Head A (816 serial)	1
8.	W5/8"*3"L	Socket Head Cap Screw	2
9.	1020-112	Copper collar	2
10.	816-224	Dust Protection Fold Fabric	2
11.	W1/4"*1/4"L	Round Head Screw	4
12.	816-203A	Shield Dust Guide Rail	2
13.	W3/16"*3/8"L	Round Head Screw	8
14.	W1/4"*1/4"L	Round Head Screw	4
15.	W1/4"*1/4"L	Socket Head Cap Screw	1
16.	W3/8"*1"L	Socket Head Cap Screw	12
17.	816-202	Vertical Guide Rail	2
18.	816-207	Shield Dust	1
19.	W3/4"*2"L	Hexagonal Head Screw	4
20.	W1/2"*2 1/2"L	Socket Head Cap Screw	3
21.	W3/8"*1"L	Set screw	12

# COLUMN ASS'Y

(1020AH)

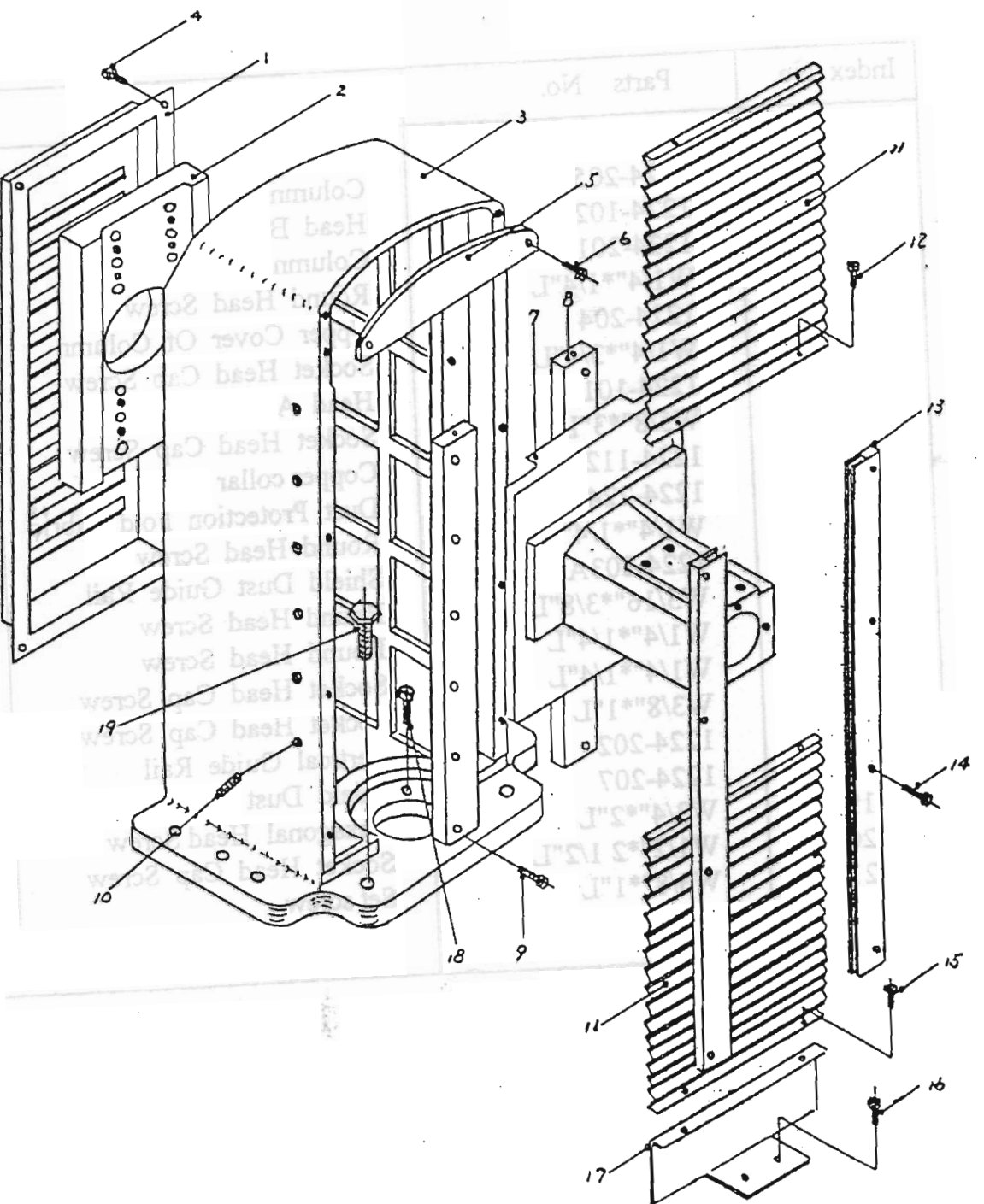
Index No.	Parts No.	Parts Name	Q'ty
1.	1020-205	Column Rear Cover	1
2.	1020-102	Head B	1
3.	1020-201	Column	1
4.	W1/4"*1/4"L	Round Head Screw	6
5.	1020-204A	Upper Cover Of Column	1
6.	W1/4"*3/4"L	Socket Head Cap Screw	2
7.	1020-101	Head A (1020 serial)	1
	N1224-101	Head A (N1224 serial)	1
8.	W5/8"*3"L	Socket Head Cap Screw	2
9.	1020-112	Copper collar	2
10.	1020-224	Dust Protection Fold Fabric	2
11.	W1/4"*1/4"L	Round Head Screw	4
12.	1020-203A	Shield Dust Guide Rail	2
13.	W3/16"*3/8"L	Round Head Screw	8
14.	W1/4"*1/4"L	Round Head Screw	4
15.	W1/4"*1/4"L	Socket Head Cap Screw	1
16.	W3/8"*1"L	Socket Head Cap Screw	12
17.	1020-202A	Vertical Guide Rail	2
18.	1020-207A	Shield Dust	1
19.	W3/4"*2"L	Hexagonal Head Screw	4
20.	W1/2"*2 1/2"L	Socket Head Cap Screw	3
21.	W3/8"*1"L	Set screw	12

# COLUMN ASS'Y

(1224AH)

Index No.	Parts No.	Parts Name	Qty
1.	1224-205-1	Column Rear Cover	1
2.	1224-102	Head B	1
3.	1224-201	Column	1
4.	W1/4"*1/4"L	Round Head Screw	6
5.	1224-204	Upper Cover Of Column	1
6.	W1/4"*3/4"L	Socket Head Cap Screw	2
7.	1224-101	Head A	1
8.	W5/8"*3"L	Socket Head Cap Screw	2
9.	1224-112	Copper collar	2
10.	1224-224	Dust Protection Fold Fabric	2
11.	W1/4"*1/4"L	Round Head Screw	4
12.	1224-203A	Shield Dust Guide Rail	2
13.	W3/16"*3/8"L	Round Head Screw	10
14.	W1/4"*1/4"L	Round Head Screw	4
15.	W1/4"*1/4"L	Socket Head Cap Screw	1
16.	W3/8"*1"L	Socket Head Cap Screw	12
17.	1224-202	Vertical Guide Rail	2
18.	1224-207	Shield Dust	1
19.	W3/4"*2"L	Hexagonal Head Screw	4
20.	W1/2"*2 1/2"L	Socket Head Cap Screw	3
21.	W3/8"*1"L	Set screw	12

# COLUMN ASS'Y (1632 SERIES)





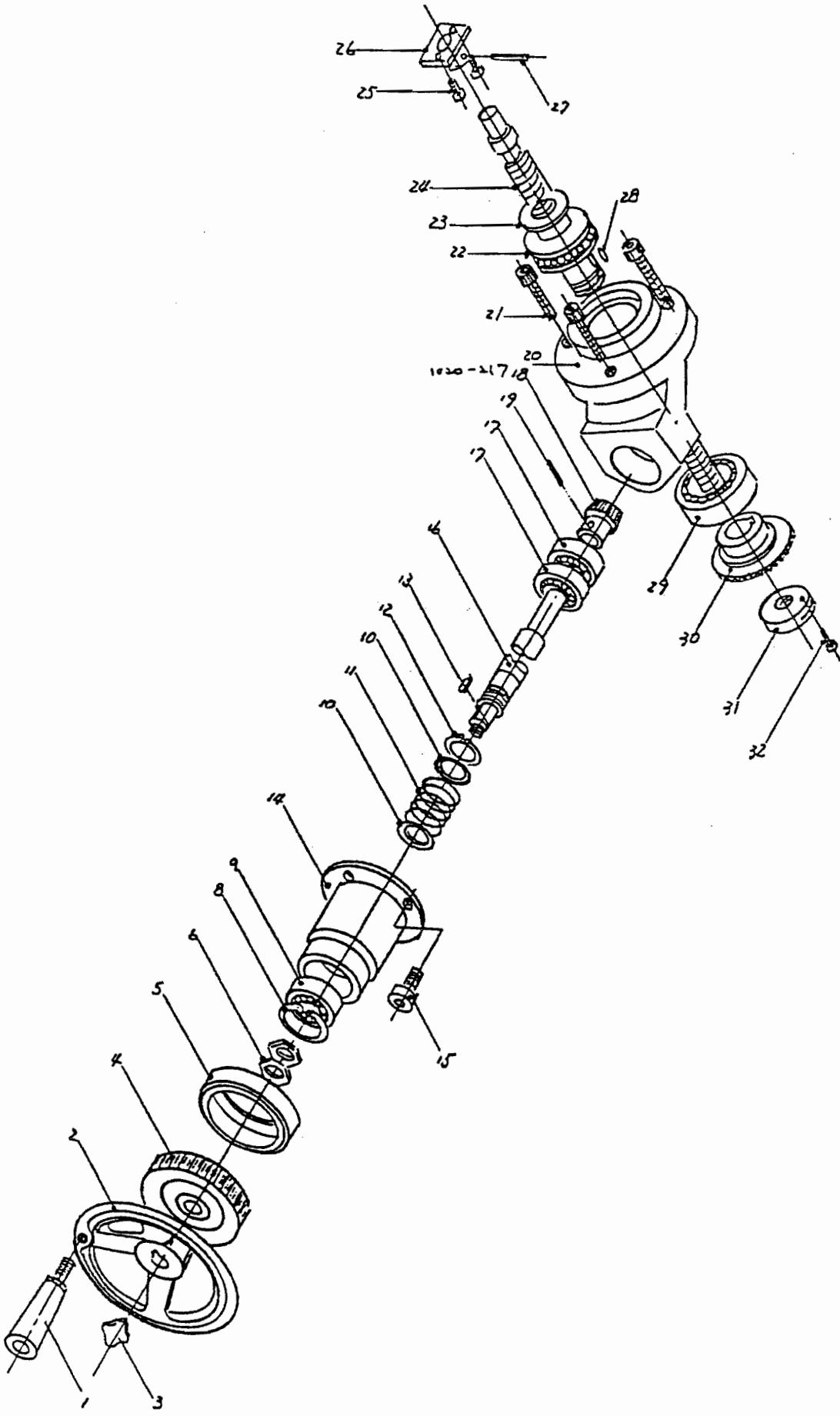
# COLUMN ASS'Y

(1632AH,AHD)

Index No.	Parts No.	Parts Name	Qty
1.	1632-205	Column Rear Cover	1
2.	1632-102A	Head B	1
3.	1632-201	Column	1
4.	W1/4"*1/4"L	Round Head Screw	6
5.	1632-204	Upper Cover Of Column	1
6.	W1/4"*1"L	Socket Head Cap Screw	2
7.	1632-101	Head A	1
8.	1632-202	Vertical Guide Rail	2
9.	W1/2"*1 1/2"L	Socket Head Cap Screw	16
10.	W1/2"*1"L	Set Screw	16
11.	1632-206	Dust Protection Fold Fabric	2
12.	W3/16"*1/4"L	Round Head Screw	4
13.	1632-203	Shield Dust Guide Rail	2
14.	W3/16"*1/4"L	Round Head Screw	10
15.	W3/16"*1/4"L	Round Head Screw	4
16.	W3/16"*1/4"L	Round Head Screw	2
17.	1632-207	Shield Dust	1
18.	W1/2"*2 1/2"L	Socket Head Cap Screw	3
19.	W3/4"*2"L	Hexagonal Head Screw	8

# UPPER & LOWER TRANSMISSION ASS'Y

(618, 200, 1020AH, 1224AH, 1632AH)





# UPPER&LOWER TRANSMISSION ASS'Y

(618,200,1020AH,1224AH)

Index No.	Parts No.	Parts Name	Qty
1.	1020-728	Grip	1
2.	1020-714	Handwheel	1
3.	1020-729	Cap Nut	1
4.	1020-505	Graduation Dial	1
5.	1020-504	Graduation Dial Holder	1
6.	1020-410	Hexagonal Nut	2
7.			
8.	R-52	Snap Ring	1
9.	# 1205	Ball Bearing	1
10.	1020-506	Washer	2
11.	1020-507	Spring	1
12.	S25	Snap Ring	1
13.	5*5*20L	Key	1
14.	1020-502	Bracket	1
15.	W5/16"*1"L	Socket Head Cap Screw	3
16.	618-503	Transmission shaft	1
	816-503	Transmission shaft	1
	1020-503	Transmission shaft	1
	N1224-503	Transmission shaft	1
	1224-503	Transmission shaft	1
17.	# 6204	Ball Bearing	2
18.	1020-217	Bevel Pinion	1
19.	φ 6*30L	Spring Pin	1
20.	1020-214	Gear Seat	1
21.	W1/2"*2"L	Socket Head Cap Screw	3
22.	# 51108	Ball Bearing	1
23.	1020-213	Upper&lower Lead Screw Socket	1
24.	618,816-212	Upper&lower Lead Screw	1
	1020,N1224-212	Upper&lower Lead Screw	1
	1224-212	Upper&lower Lead Screw	1
25.	W5/16"*3/4"L	Socket Head Cap Screw	2
26.	1020-218	Connect Bracket	1
27.	φ 6*30L	Spring Pin	1
28.	7*5*25	Key	1
29.	# 6011Z	Ball Bearing	1
30.	1020-216	Bevel Gear	1
31.	1020-215	Lock Nut	1
32.	W1/4"*1/4"L	Socket Head Cap Screw	1

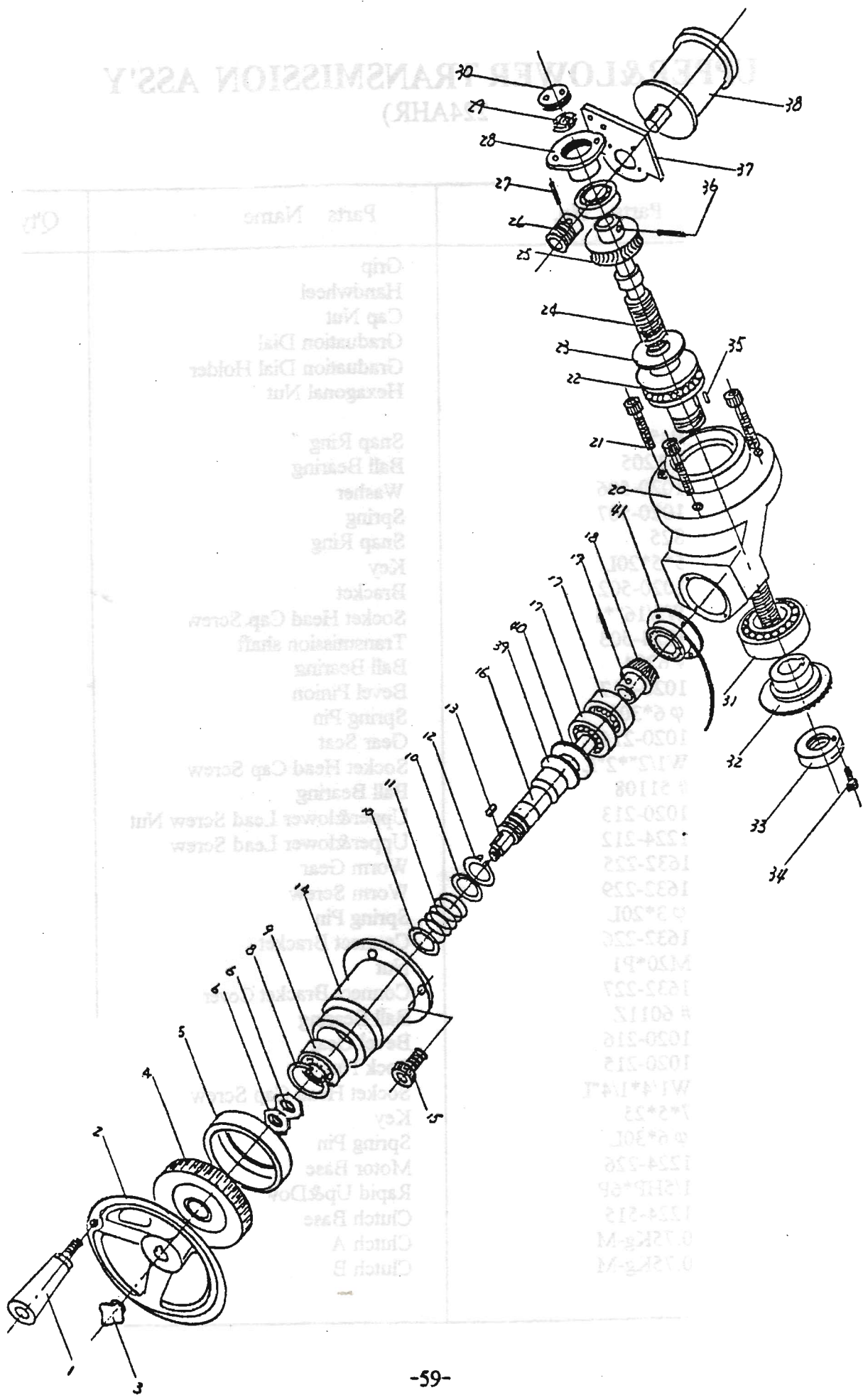
# UPPER&LOWER TRANSMISSION ASS'Y (1632AH)

Parts No

Index No.	Parts No.	Parts Name	Q'ty
1.	1020-728	Grip	1
2.	1020-714	Handwheel	1
3.	1020-729	Cap Nut	1
4.	1020-505	Graduation Dial	1
5.	1020-504	Graduation Dial Holder	1
6.	1020-410	Hexagonal Nut	2
7.			
8.	R-52	Snap Ring	1
9.	# 1205	Ball Bearing	1
10.	1020-506	Washer	2
11.	1020-507	Spring	1
12.	S25	Snap Ring	1
13.	5*5*20L	Key	1
14.	1020-502	Bracket	1
15.	W5/16"*1"L	Socket Head Cap Screw	3
16.	1632-503	Transmission shaft	1
17.	# 6204	Ball Bearing	2
18.	1632-221	Bevel Pinion	1
19.	φ 6*30L	Spring Pin	1
20.	1632-223	Gear Seat	1
21.	W1/2"*2"L	Socket Head Cap Screw	3
22.	# 51110	Ball Bearing	1
23.	1632-213	Upper&lower Lead Screw Socket	1
24.	1632-212	Upper&lower Lead Screw	1
25.	W5/16"*3/4"L	Socket Head Cap Screw	2
26.	1632-218	Connect Bracket	1
27.	φ 6*30L	Spring Pin	1
28.	7*5*25	Key	1
29.	# 6213	Ball Bearing	1
30.	1632-222	Bevel Gear	1
31.	1632-215	Lock Nut	1
32.	W1/4"*1/4"L	Socket Head Cap Screw	1

# UPPER & LOWER TRANSMISSION ASS'Y

(1224AHR, 1632AHR)



# UPPER&LOWER TRANSMISSION ASS'Y

(1224AHR)

Index No.	Parts No.	Parts Name	Qty
1.	1020-728	Grip	1
2.	1020-714	Handwheel	1
3.	1020-729	Cap Nut	1
4.	1020-505	Graduation Dial	1
5.	1020-504	Graduation Dial Holder	1
6.	1020-410	Hexagonal Nut	2
7.			
8.	R-52	Snap Ring	1
9.	# 1205	Ball Bearing	1
10.	1020-506	Washer	2
11.	1020-507	Spring	1
12.	S25	Snap Ring	1
13.	5*5*20L	Key	1
14.	1020-502	Bracket	1
15.	W5/16"*1"L	Socket Head Cap Screw	3
16.	1224-503	Transmission shaft	1
17.	# 6204	Ball Bearing	2
18.	1020-217	Bevel Pinion	1
19.	φ 6*30L	Spring Pin	1
20.	1020-214	Gear Seat	1
21.	W1/2"*2"L	Socket Head Cap Screw	3
22.	# 51108	Ball Bearing	1
23.	1020-213	Upper&lower Lead Screw Nut	1
24.	1224-212	Upper&lower Lead Screw	1
25.	1632-225	Worm Gear	1
26.	1632-229	Worm Screw	1
27.	φ 3*20L	Spring Pin	1
28.	1632-226	Connect Bracket	1
29.	M20*P1	Nut	1
30.	1632-227	Connect Bracket Cover	1
31.	# 6011Z	Ball Bearing	1
32.	1020-216	Bevel Gear	1
33.	1020-215	Lock Nut	1
34.	W1/4*1/4"L	Socket Head Cap Screw	1
35.	7*5*25	Key	1
36.	φ 6*30L	Spring Pin	1
37.	1224-226	Motor Base	1
38.	1/5HP*6P	Rapid Up&Down Motor	1
39.	1224-515	Clutch Base	1
40.	0.75Kg-M	Clutch A	1
41.	0.75Kg-M	Clutch B	1

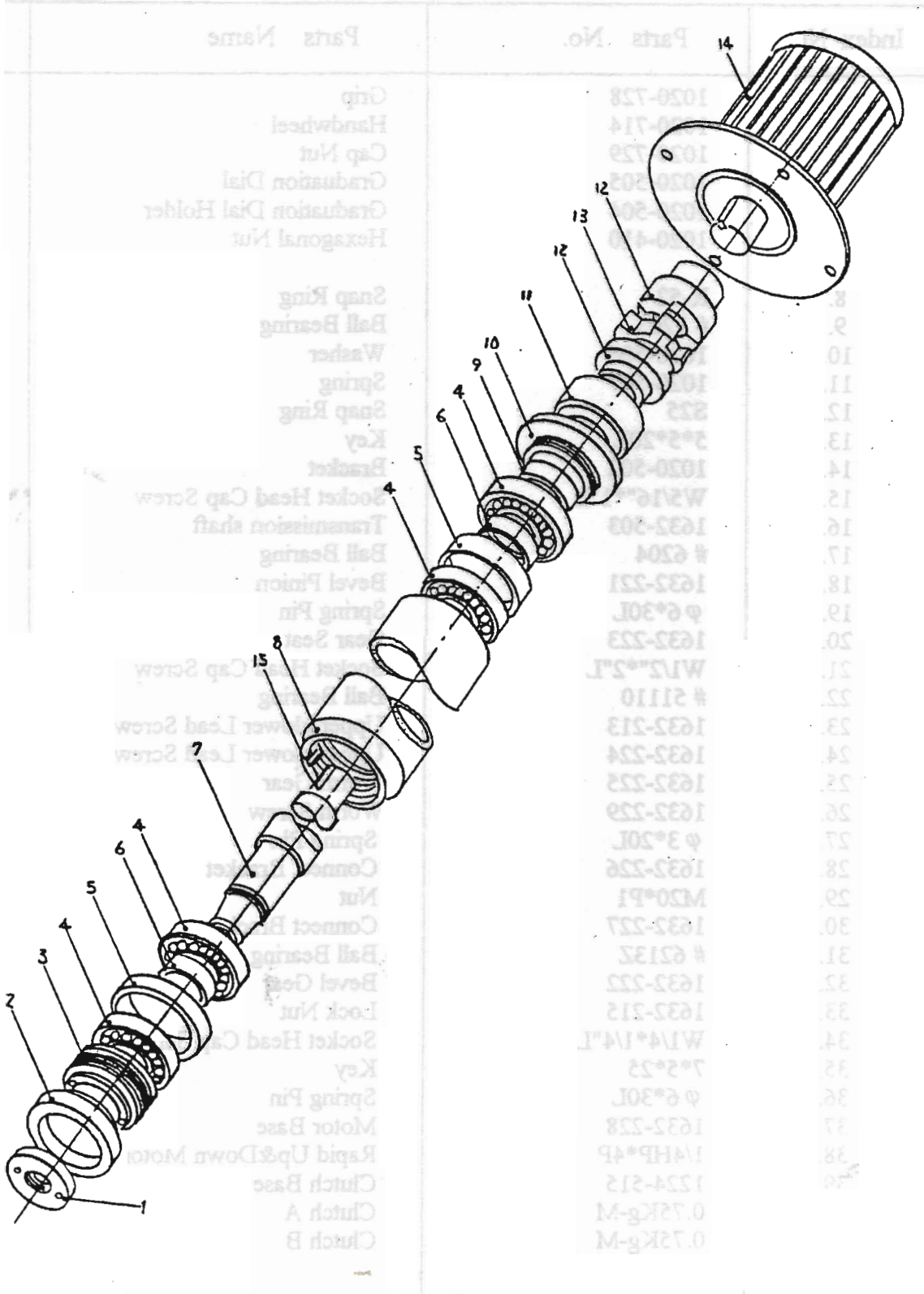
# UPPER&LOWER TRANSMISSION ASS'Y (1632AHR)

Index No.	Parts No.	Parts Name	Q'ty
1.	1020-728	Grip	1
2.	1020-714	Handwheel	1
3.	1020-729	Cap Nut	1
4.	1020-505	Graduation Dial	1
5.	1020-504	Graduation Dial Holder	1
6.	1020-410	Hexagonal Nut	2
7.			
8.	R-52	Snap Ring	1
9.	# 1205	Ball Bearing	1
10.	1020-506	Washer	2
11.	1020-507	Spring	1
12.	S25	Snap Ring	1
13.	5*5*20L	Key	1
14.	1020-502	Bracket	1
15.	W5/16"*1"L	Socket Head Cap Screw	3
16.	1632-503	Transmission shaft	1
17.	# 6204	Ball Bearing	2
18.	1632-221	Bevel Pinion	1
19.	φ 6*30L	Spring Pin	1
20.	1632-223	Gear Seat	1
21.	W1/2"*2"L	Socket Head Cap Screw	3
22.	# 51110	Ball Bearing	1
23.	1632-213	Upper&lower Lead Screw Nut	1
24.	1632-224	Upper&lower Lead Screw	1
25.	1632-225	Worm Gear	1
26.	1632-229	Worm Screw	1
27.	φ 3*20L	Spring Pin	1
28.	1632-226	Connect Bracket	1
29.	M20*P1	Nut	1
30.	1632-227	Connect Bracket Cover	1
31.	# 6213Z	Ball Bearing	1
32.	1632-222	Bevel Gear	1
33.	1632-215	Lock Nut	1
34.	W1/4*1/4"L	Socket Head Cap Screw	1
35.	7*5*25	Key	1
36.	φ 6*30L	Spring Pin	1
37.	1632-228	Motor Base	1
38.	1/4HP*4P	Rapid Up&Down Motor	1
39.	1224-515	Clutch Base	1
40.	0.75Kg-M	Clutch A	1
41.	0.75Kg-M	Clutch B	1



# SPINDLE ASS'Y

(618, 200, 1020, 1224, 1632)



Parts Name

Parts No.

Grip  
Handwheel  
Cap Nut  
Graduation Dial  
Graduation Dial Holder  
Hexagonal Nut  
  
Snap Ring  
Ball Bearing  
Washer  
Spring  
Snap Ring  
Key  
Bracket  
Socket Head Cap Screw  
Transmission shaft  
Ball Bearing  
Bevel Pinion  
Spring Pin  
Nut  
Socket Head Cap Screw  
Ball Bearing  
Washer  
Lower Lead Screw  
Lower Lead Screw  
Spring  
Nut  
Connect Holder  
Ball Bearing  
Bevel Gear  
Lock Nut  
Socket Head Cap Screw  
Key  
Spring Pin  
Motor Base  
Rapid Up&Down Motor  
Clutch Base  
Clutch A  
Clutch B

1020-728  
1020-714  
1020-729  
1020-803  
1020-300  
1020-430  
1020-500  
W516  
1632-303  
# 6204  
1632-221  
φ 6\*30L  
1632-223  
W12\*2.7L  
# 21110  
1632-213  
1632-224  
1632-225  
1632-229  
φ 3\*20L  
1632-226  
M20\*P1  
1632-227  
# 6213Z  
1632-222  
1632-215  
W14\*1/4"L  
7\*2\*25  
φ 6\*30L  
1632-228  
1/4HP\*4P  
1224-215  
0.75Kg-M  
0.75Kg-M

# SPINDLE ASS'Y

(618,200,1020)

Index No.	Parts No.	Parts Name	Q'ty
1.	1020-106	Spindle Nut	1
2.	1020-105	Spindle Cover	1
3.	1020-107	Spindle Cover Bush	1
4.	# 7206 CP4	Angular Contact Bearing	4
5.	1020-109	Spacer	2
6.	1020-108	Spacer	2
7.	618-134	Spindle Shaft	1
	816-134	Spindle Shaft	1
	1020-144	Spindle Shaft	1
	N1224-144	Spindle Shaft	1
8.	618-103	Spindle Housing	1
	816-103	Spindle Housing	1
	1020-103	Spindle Housing	1
	N1224-103	Spindle Housing	1
9.	1020-110	Spindle Cover Bush	1
10.	1020-128	Spindle Cover	1
11.	1020-127	Spindle Nut	1
12.	1020-111	Coupling	2
13.	1020-113	Rubber Coupling	1
14.	2HP*2P	Spindle Motor	1



# SPINDLE ASS'Y

(1224 SERIES)

Index No.	Parts No.	Parts Name	Q'ty
1.	1224-106	Spindle Nut	1
2.	1224-105	Spindle Cover	1
3.	1224-107	Spindle Cover Bush	1
4.	# 7208 CP4	Angular Contact Bearing	4
5.	1224-109	Spacer (inner)	2
6.	1224-108	Spacer (outside)	2
7.	1224-104	Spindle Shaft	1
8.	1224-103	Spindle Housing	1
9.	1224-110	Spindle Cover Bush	1
10.	1224-128	Spindle Cover	1
11.	1224-127	Spindle Nut	1
12.	1224-111	Coupling	2
13.	1224-113	Rubber Coupling	1
14.	5 HP×2P	Spindle Motor	1

# SPINDLE ASS'Y

## (1632 SERIES)

Index No.	Parts No.	Parts Name	Qty
1.	1632-112	Spindle Nut	1
2.	1632-105	Spindle Cover	1
3.	1632-106	Spindle Cover Bush	1
4.	# 7209 CP4	Angular Contact Bearing	4
5.	1632-109	Spacer	2
6.	1632-110	Spacer	2
7.	1632-104	Spindle Shaft	1
8.	1632-103	Spindle Housing	1
9.	1632-107	Spindle Cover Bush	1
10.	1632-108	Spindle Cover	1
11.	1632-115	Spindle Nut	1
12.	1632-111	Coupling	2
13.	1632-113	Rubber Coupling	1
14.	7 1/2HP*4P	Spindle Motor	1

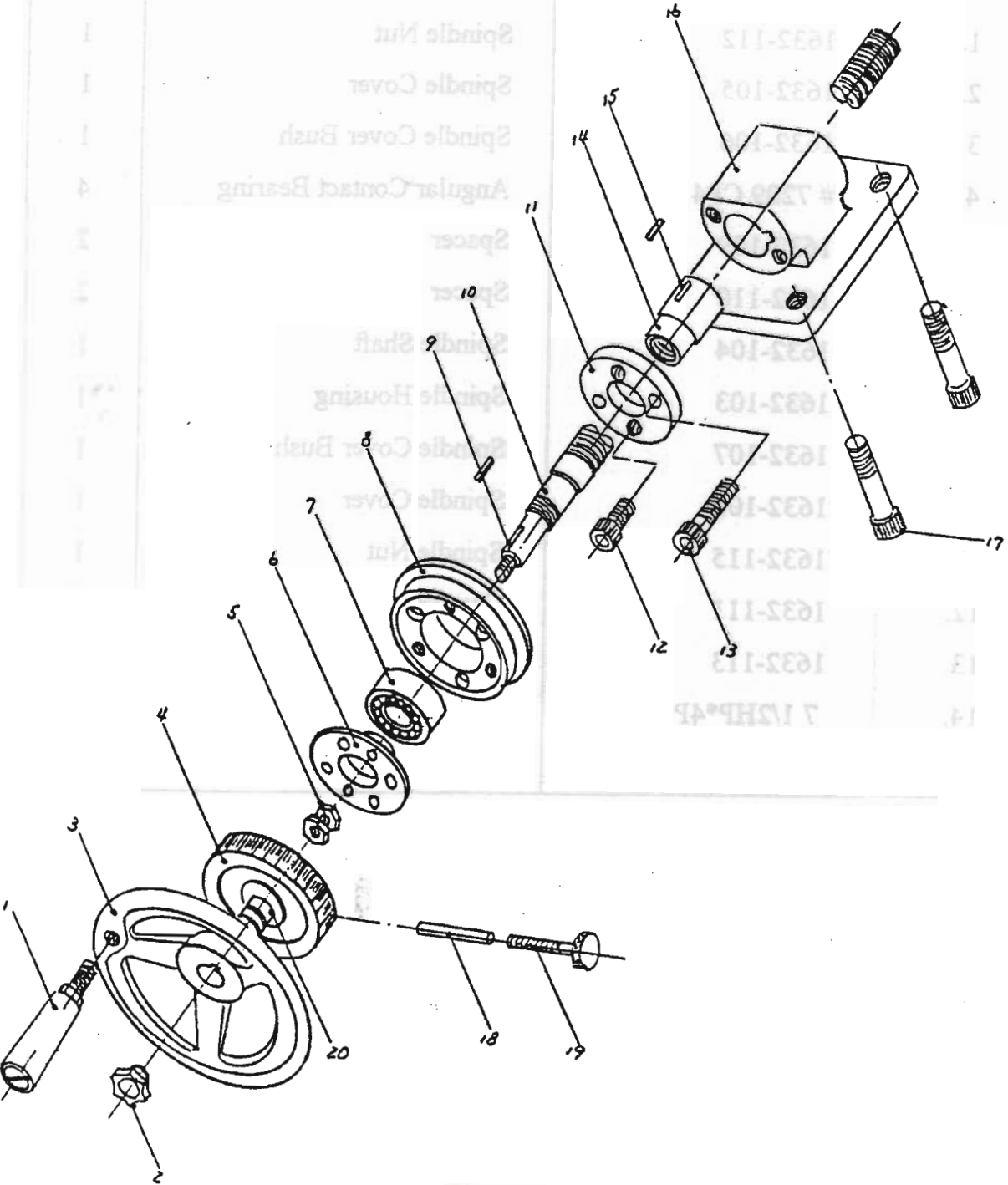


# CROSS FEED ASS'Y

(618,200)

(1632 SERIES)

Qty	Parts Name	Parts No.	Index No.
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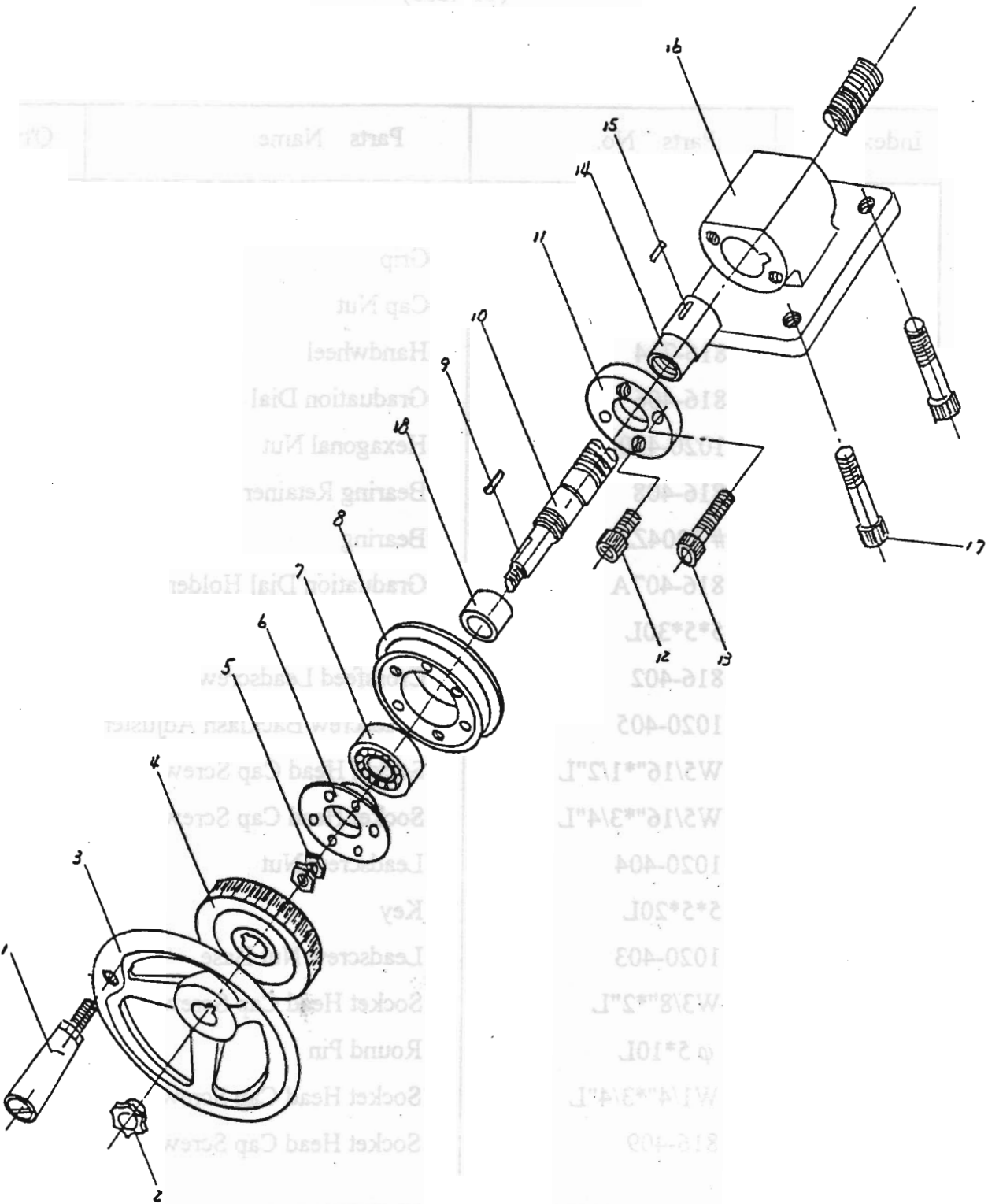
# CROSS FEED ASS'Y

(618,200)

Index No.	Parts No.	Parts Name	Qty
1.	1020-728	Grip	1
2.	1020-729	Cap Nut	1
3.	816-714	Handwheel	1
4.	816-406	Graduation Dial	1
5.	1020-410	Hexagonal Nut	2
6.	816-408	Bearing Retainer	1
7.	# 5204ZZ	Bearing	1
8.	816-407A	Graduation Dial Holder	1
9.	5*5*30L	Key	1
10.	816-402	Crossfeed Leadscrew	1
11.	1020-405	Leadscrew Backlash Adjuster	1
12.	W5/16"*1/2"L	Socket Head Cap Screw	2
13.	W5/16"*3/4"L	Socket Head Cap Screw	2
14.	1020-404	Leadscrew Nut	1
15.	5*5*20L	Key	1
16.	1020-403	Leadscrew Nut Base	1
17.	W3/8"*2"L	Socket Head Cap Screw	4
18.	φ 5*10L	Round Pin	1
19.	W1/4"*3/4"L	Socket Head Cap Screw	1
20.	816-409	Socket Head Cap Screw	1

# CROSS FEED ASS'Y

(1020)



# CROSS FEED ASS'Y

(1020)

Index No.	Parts No.	Parts Name	Q'ty
1.	1020-728	Grip	1
2.	1020-729	Cap Nut	1
3.	1020-714	Handwheel	1
4.	1020-406	Graduation Dial	1
5.	1020-410	Hexagonal Nut	2
6.	1020-408	Bearing Retainer	1
7.	# 5204ZZ	Bearing	1
8.	1020-407	Graduation Dial Holder	3
9.	5*5*30L	Key	1
10.	1020-402	Crossfeed Leadscrew	1
11.	1020-405	Leadscrew Backlash Adjuster	1
12.	W5/16"*1/2"L	Socket Head Cap Screw	2
13.	W5/16"*3/4"L	Socket Head Cap Screw	2
14.	1020-404	Leadscrew Nut	1
15.	5*5*20L	Key	1
16.	1020-403	Leadscrew Nut Base	1
17.	W3/8"*2"L	Socket Head Cap Screw	4
18.	1020-409	Spacer	1

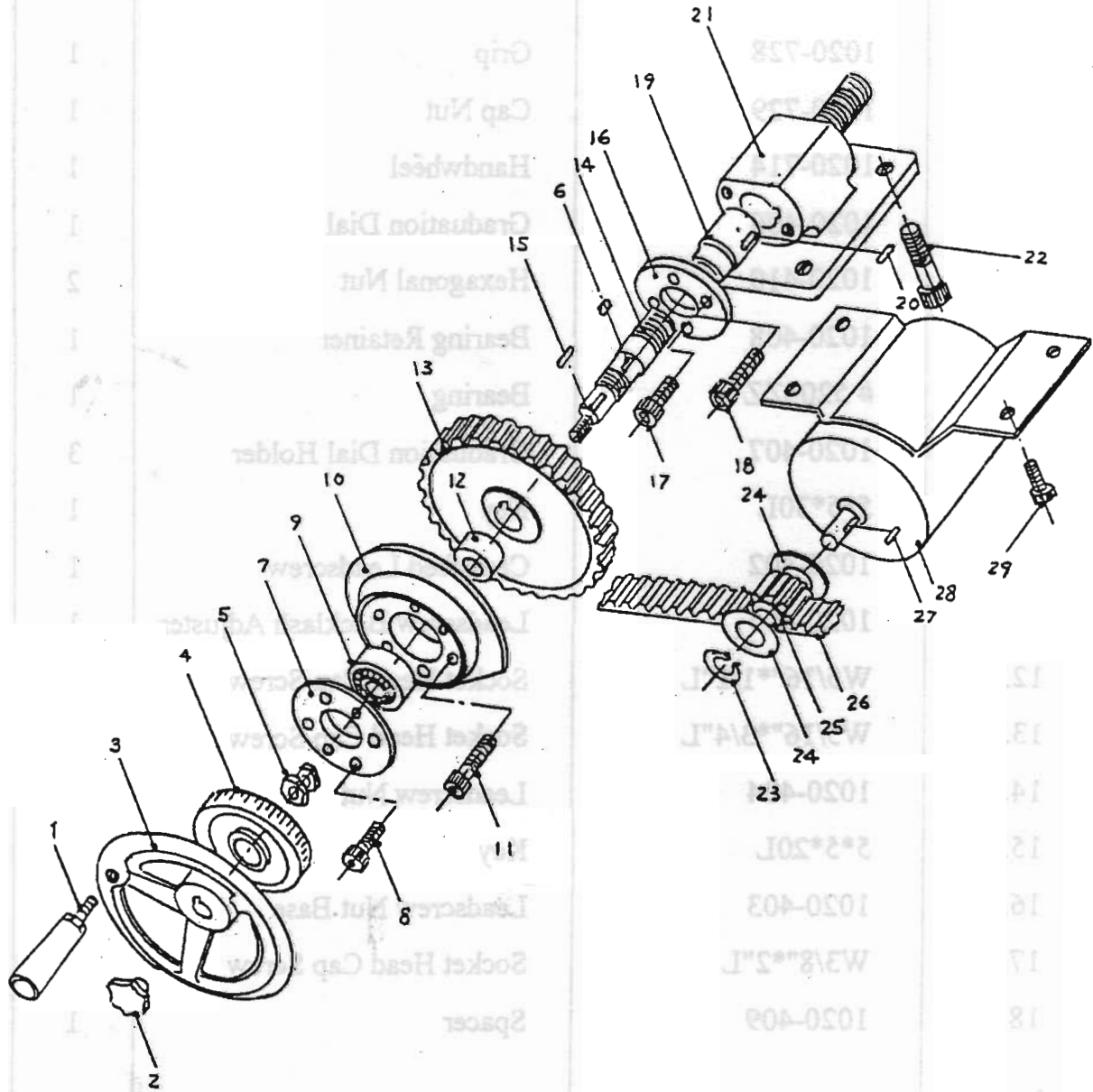


# CROSS FEED ASS'Y

(1020AH)

10201

Index No. Parts No. Parts Name Qty





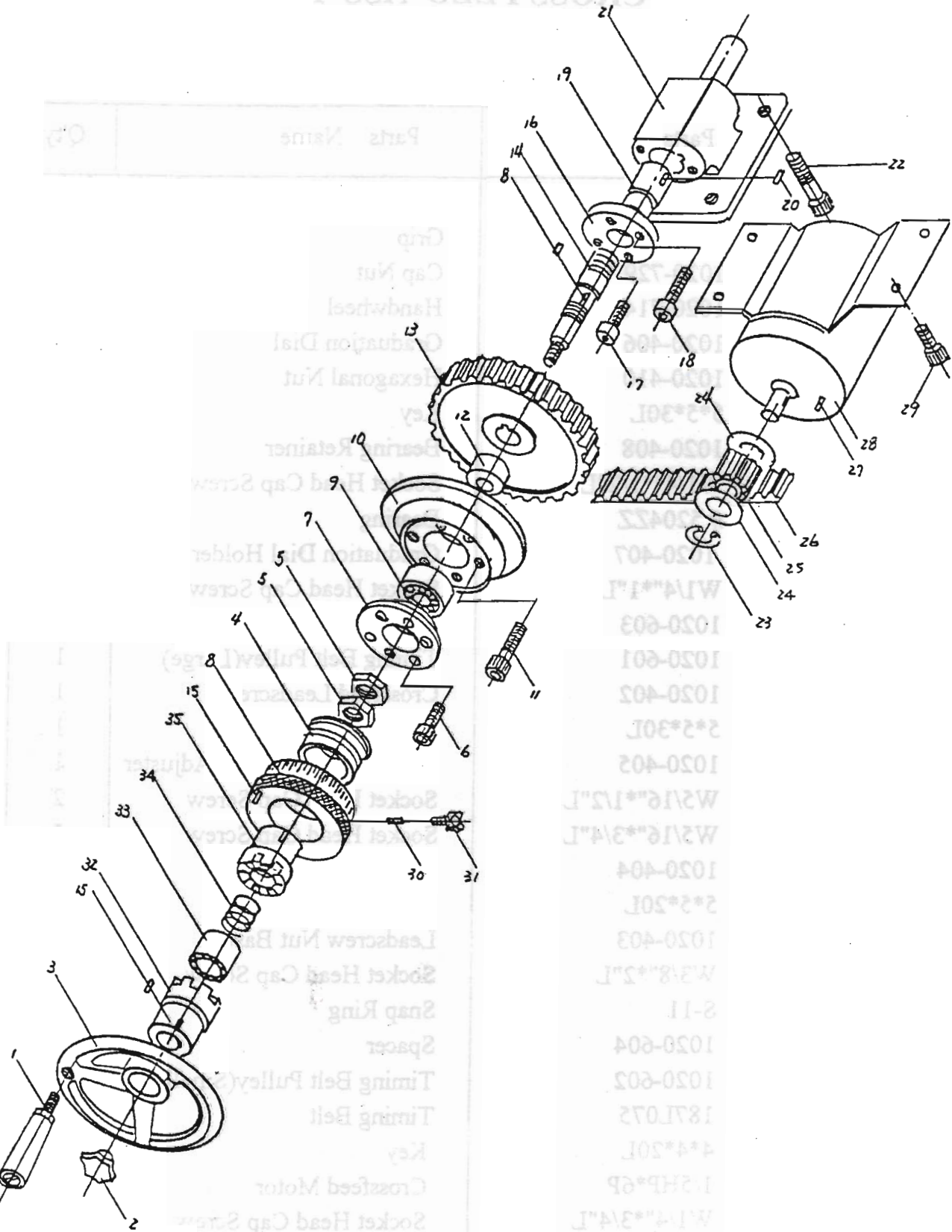
# CROSS FEED ASS'Y

(1020AH)

Index No.	Parts No.	Parts Name	Qty
1.	1020-728	Grip	1
2.	1020-729	Cap Nut	1
3.	1020-714	Handwheel	1
4.	1020-406	Graduation Dial	1
5.	1020-410	Hexagonal Nut	2
6.	5*5*30L	Key	1
7.	1020-408	Bearing Retainer	1
8.	W1/4"*1/2"L	Socket Head Cap Screw	3
9.	# 5204ZZ	Bearing	1
10.	1020-407	Graduation Dial Holder	1
11.	W1/4"*1"L	Socket Head Cap Screw	3
12.	1020-603	Spacer	1
13.	1020-601	Timing Belt Pulley(Large)	1
14.	1020-402	Crossfeed Leadscrew	1
15.	5*5*30L	Key	1
16.	1020-405	Leadscrew Backlash Adjuster	1
17.	W5/16"*1/2"L	Socket Head Cap Screw	2
18.	W5/16"*3/4"L	Socket Head Cap Screw	2
19.	1020-404	Leadscrew Nut	1
20.	5*5*20L	Key	1
21.	1020-403	Leadscrew Nut Base	1
22.	W3/8"*2"L	Socket Head Cap Screw	4
23.	S-11	Snap Ring	1
24.	1020-604	Spacer	2
25.	1020-602	Timing Belt Pulley(Small)	1
26.	187L075	Timing Belt	1
27.	4*4*20L	Key	1
28.	1/5HP*6P	Crossfeed Motor	1
29.	W1/4"*3/4"L	Socket Head Cap Screw	4

# CROSS FEED ASS'Y

(1224AH, 1632AH)



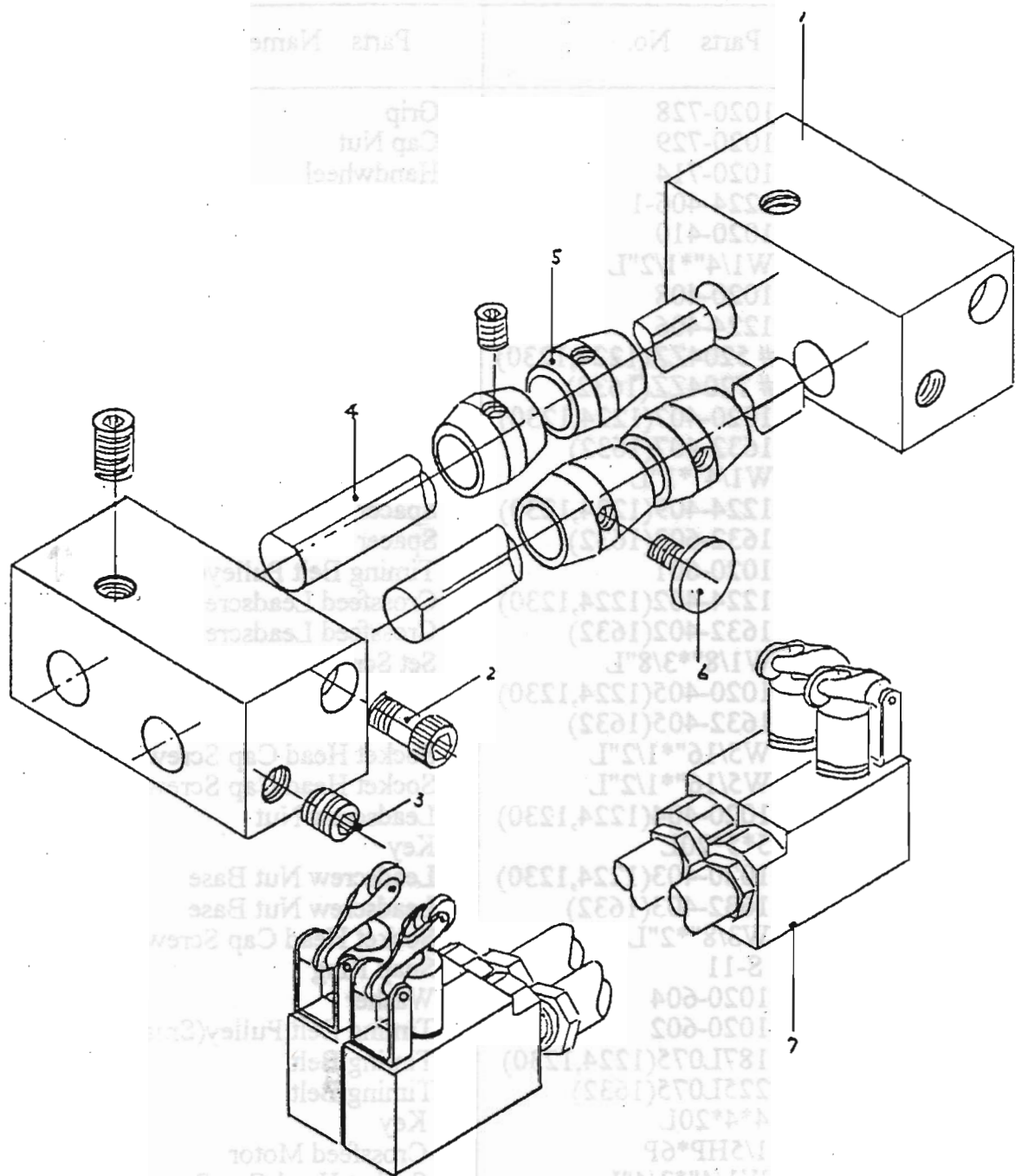
# CROSS FEED ASS'Y

( 1224AH, 1632AH)

Index No.	Parts No.	Parts Name	Qty
1.	1020-728	Grip	1
2.	1020-729	Cap Nut	1
3.	1020-714	Handwheel	1
4.	1224-406-1	Graduation Dial Bush	1
5.	1020-410	Hexagonal Nut	2
6.	W1/4"*1/2"L	Socket Head Cap Screw	3
7.	1020-408	Bearing Retainer	1
8.	1224-406	Graduation Dial	1
9.	# 5204ZZ(1224,1230)	Bearing	1
	# 7204ZZ(1632)	Bearing	2
10.	1020-407(1224,1230)	Graduation Dial Holder	1
	1632-407(1632)	Graduation Dial Holde	1
11.	W1/4"*1"L	Socket Head Cap Screw	3
12.	1224-409(1224,1230)	Spacer	1
	1632-603(1632)	Spacer	1
13.	1020-601	Timing Belt Pulley(Large)	1
14.	1224-402(1224,1230)	Crossfeed Leadscre	1
	1632-402(1632)	Crossfeed Leadscre	1
15.	W1/8"*3/8"L	Set Screw	4
16.	1020-405(1224,1230)	Leadscrew Backlash Adjuster	1
	1632-405(1632)	Leadscrew Backlash Adjuster	1
17.	W5/16"*1/2"L	Socket Head Cap Screw	2
18.	W5/16"*1/2"L	Socket Head Cap Screw	2
19.	1020-404(1224,1230)	Leadscrew Nut	1
20.	5*5*20L	Key	1
21.	1020-403(1224,1230)	Leadscrew Nut Base	1
	1632-403(1632)	Leadscrew Nut Base	1
22.	W3/8"*2"L	Socket Head Cap Screw	4
23.	S-11	Snap Ring	1
24.	1020-604	Washer	2
25.	1020-602	Timing Belt Pulley(Small)	1
26.	187L075(1224,1230)	Timing Belt	1
	225L075(1632)	Timing Belt	1
27.	4*4*20L	Key	1
28.	1/5HP*6P	Crossfeed Motor	1
29.	W1/4"*3/4"L	Socket Head Cap Screw	4
30.	φ 5*10L	Round Pin	1
31.	W1/4"*3/4"L	Ajusting Screw	1
32.	1224-422	Clutch B	1
33.	TA1715	Nrrdle Bearing	1
34.	1224-425	Spring	1
35.	1224-424	Clutch A	1

# CROSSFEED CONTROL LIMIT SWITCH ASS'Y

(1020AH, 1224AH, 1632AH)



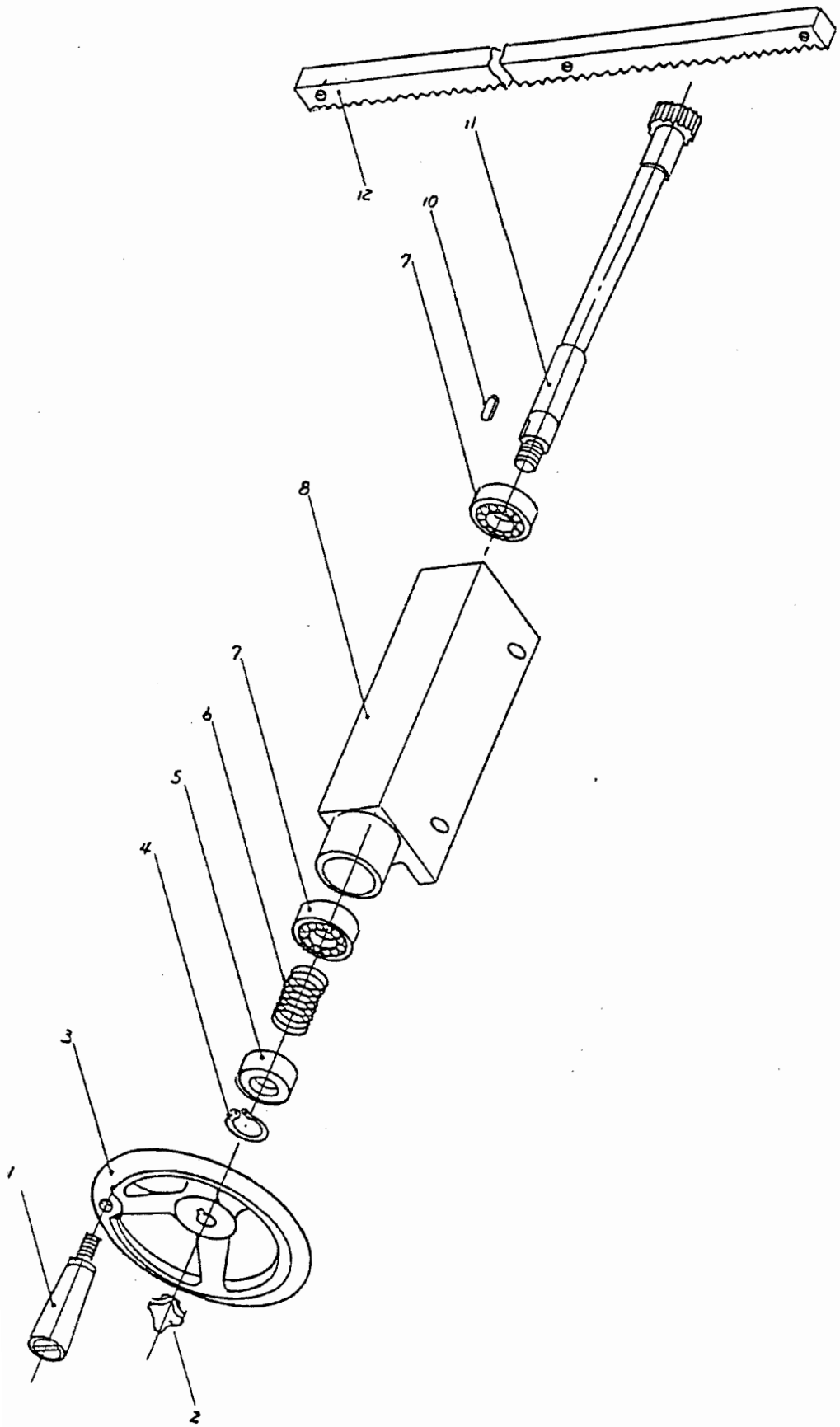
# CROSSFEED CONTROL LIMIT SWITCH ASS'Y

(1020AH, 1224AH, 1632AH)

Index No.	Parts No.	Parts Name	Qty
1.	1020-609-1	Mouting Block	2
2.	W1/4"*2 1/2"L	Socket Head Cap Screw	2
3.	W1/4"*5/8"L	Headless Socket Screw	4
4.	1020-607	Pad Rod	2
	1224-607	Pad Rod	2
	1632-607	Pad Rod	2
5.	1020-608	Dog	4
6.	1020-N808	Set Screw	2
7.	ZE-NA2-2	Limit Switch	4
8.	W1/4"*1/4"L	Headless Socket Screw	2

# LONGITUDINAL HAND FEED ASS'Y

(1020AH, 1224AH, 1632AH)



# LONGITUDINAL HAND FEED ASS'Y

(1020AH)

Index No.	Parts No.	Parts Name	Qty
1.	1020-728	Grip	1
2.	1020-729	Cap Nut	1
3.	1020-714	Handwheel	1
4.	S-17	Snap Ring	1
5.	1020-623	Bush	1
6.	1020-626	Spring	1
7.	# 6003ZZ	Ball Bearing	2
8.	1020-621	Frame	1
9.	R-35	Snap Ring	1
10.	5*5*15L	Key	1
11.	1020-622	Pinion Shaft	1
12.	1020-310	Gear Rack	1



# LONGITUDINAL HAND FEED ASS'Y

(1224AH)

Index No.	Parts No.	Parts Name	Qty
1.	1020-728	Grip	1
2.	1020-729	Cap Nut	1
3.	1020-714	Handwheel	1
4.	S-17	Snap Ring	1
5.	1020-623	Bush	1
6.	1020-626	Spring	1
7.	# 6003ZZ	Ball Bearing	2
8.	1224-621	Frame	1
9.	R-35	Snap Ring	1
10.	5*5*15L	Key	1
11.	1224-622	Pinion Shaft	1
12.	1224-310	Gear Rack	1
	1230-310	Gear Rack	1

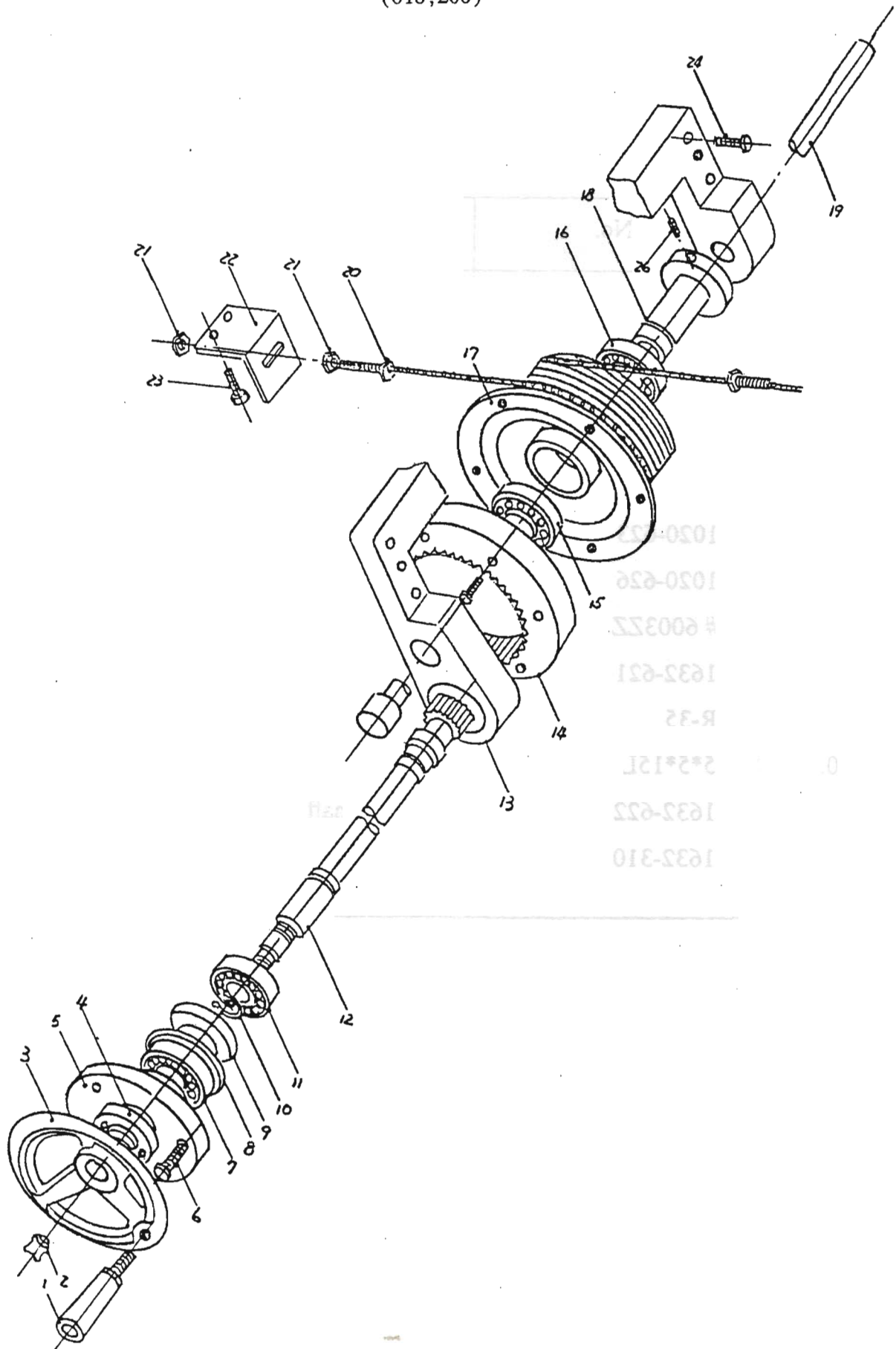
# LONGITUDINAL HAND FEED ASS'Y

(1632AH,AHD)

Index No.	Parts No.	Parts Name	Q'ty
1.	1020-728	Grip	1
2.	1020-729	Cap Nut	1
3.	1020-714	Handwheel	1
4.	S-17	Snap Ring	1
5.	1020-623	Bush	1
6.	1020-626	Spring	1
7.	# 6003ZZ	Ball Bearing	2
8.	1632-621	Frame	1
9.	R-35	Snap Ring	1
10.	5*5*15L	Key	1
11.	1632-622	Pinion Shaft	1
12.	1632-310	Gear Rack	1

# TABLE HAND FEED ASS'Y

(618,200)



# TABLE HAND FEED ASS'Y

(618,200)

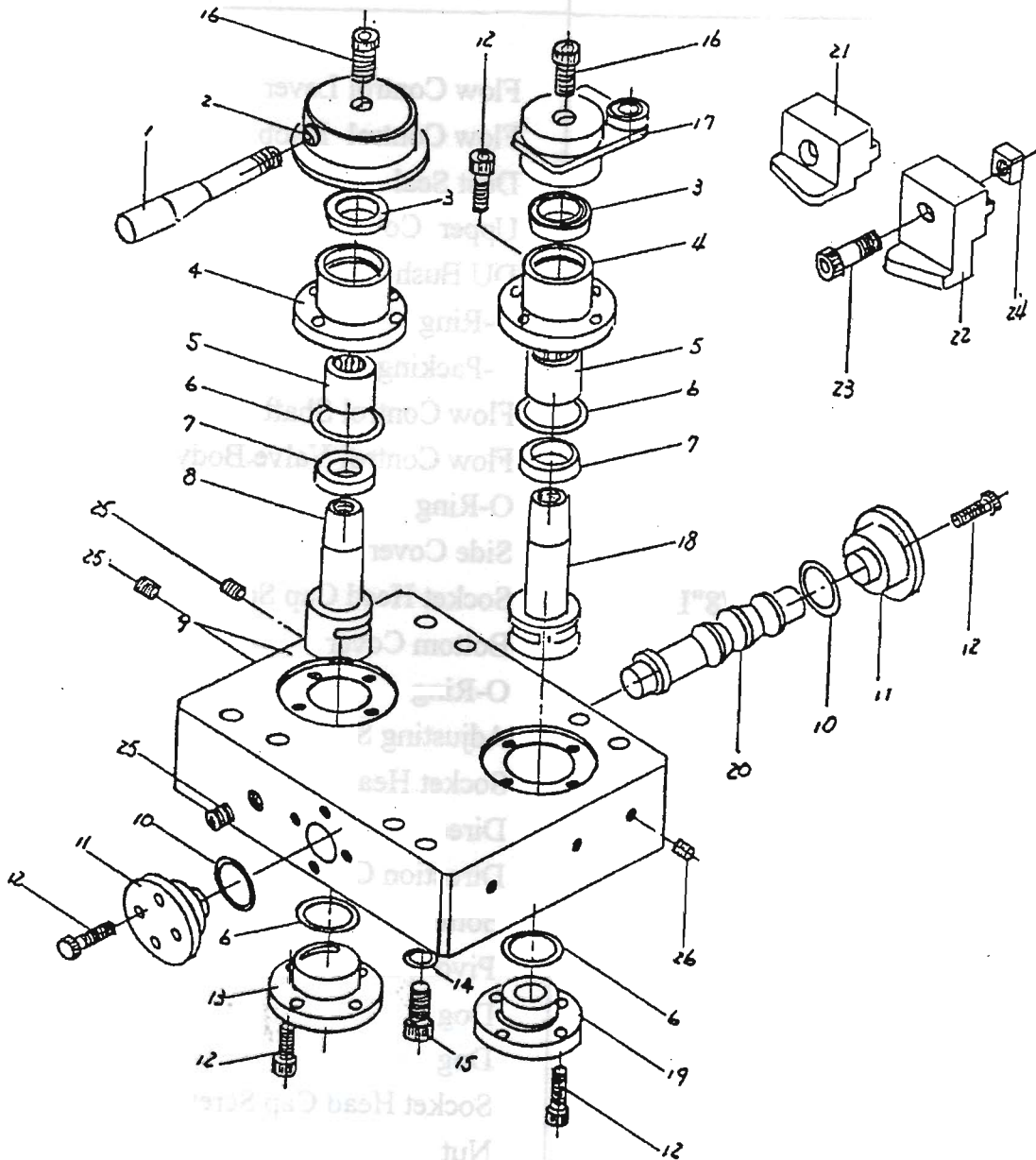
Index No.	Parts No.	Parts Name	Qty
1.	1020-728	Grip	1
2.	1020-729	Cap Nut	1
3.	1020-714	Handwheel	1
4.	1020-418	Screw Nut	1
5.	1020-419	Bearing Seat	1
6.	W1/4"*1/2"L	Socket Head Cap Screw	3
7.	# 6204ZZ	Ball Bearing	1
8.	R-47	Snap Ring	2
9.	1020-417	Cusion Socket Screw Nut	1
10.	S-20	Snap Ring	2
11.	#6004ZZ	Ball Bearing	1
12.	618-414	Gear Shaft	1
	816-414	Gear Shaft	1
13.	816-411	Drum Seat	1
14.	816-413	Annular Gear	1
15.	S25	Snap Ring	1
16.	# 6005ZZ	Ball Bearing	2
17.	816-412	Steel Wire Rope Drum	1
18.	1020-416	Drum Shaft Setting Seat	1
19.	1020-415	Drum Shaft	1
20.	618-411	Steel Wire	1
	816-422	Steel Wire	1
21.	W3/8"	Nut	4
22.	1020-311	Steel Wire Fixed Seat	2
23.	W1/4"*1/2"L	Socket Head Cap Screw	4
24.	W5/16"*3/4"L	Socket Head Cap Screw	4
25.	W1/4"*3/4"L	Socket Head Cap Screw	4
26.	W5/16"*1/2"L	Socket Head Cap Screw	1

# TABLE HAND FEED ASS'Y (1020M)

Index No.	Parts No.	Parts Name	Q'ty
1.	1020-728	Grip	1
2.	1020-729	Cap Nut	1
3.	1020-714	Handwheel	1
4.	1020-418	Screw Nut	1
5.	1020-419	Bearing Seat	1
6.	W1/4"*1/2"L	Socket Head Cap Screw	3
7.	# 6204ZZ	Ball Bearing	1
8.	R-47	Snap Ring	2
9.	1020-417	Cusion Socket Screw Nut	1
10.	S-20	Snap Ring	2
11.	#6004ZZ	Ball Bearing	1
12.	1020-414	Gear Shaft	1
13.	1020-411	Drum Seat	1
14.	1020-413	Annuiar Gear	1
15.	S25	Snap Ring	1
16.	# 6005ZZ	Ball Bearing	2
17.	1020-412	Steel Wire Rope Drum	1
18.	1020-416	Drum Shaft Setting Seat	1
19.	1020-415	Drum Shaft	1
20.	1020-422	Steel Wire	1
21.	W3/8"	Nut	4
22.	1020-311	Steel Wire Fixed Seat	2
23.	W1/4"*1/2"L	Socket Head Cap Screw	4
24.	W5/16"*3/4"L	Socket Head Cap Screw	4
25.	W1/4"*3/4"L	Socket Head Cap Screw	4
26.	W5/16"*1/2"L	Socket Head Cap Screw	1

# VALVE ASS'Y

(200H, 1020H)



# VALVE ASS'Y

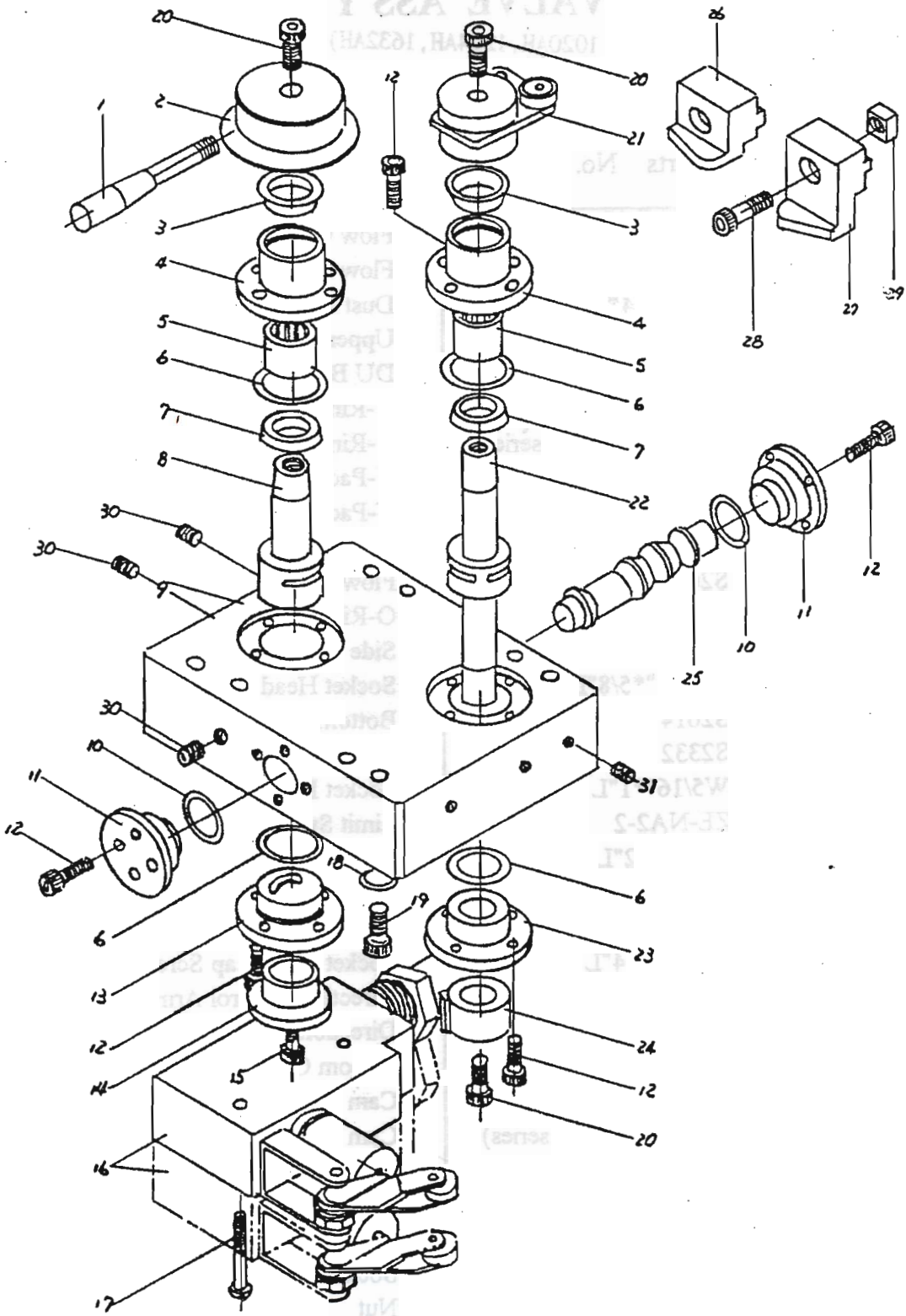
(200H, 1020H)

Index No.	Parts No.	Parts Name	Q'ty
1.	S2334	Flow Control Lever	1
2.	S2333	Flow Control Knob	1
3.	DH14*24*6	Dust Seal	2
4.	S2615	Upper Cover	2
5.	CB1512	DU Bush	2
6.	28.25*2.62	O-Ring	4
7.	UN15	U-Packing	2
8.	S2612	Flow Control Shaft	1
9.	S2611	Flow Control Valve Body	1
10.	P21	O-Ring	2
11.	S2619	Side Cover	2
12.	W3/16"*5/8"L	Socket Head Cap Screw	24
13.	S2614	Bottom Cover	1
14.	P8	O-Ring	4
15.	S2618	Adjusting Screw	1
16.	W1/4"*3/4"L	Socket Head Cap Screw	3
17.	S2335	Direction Control Arm	1
18.	S2616	Direction Control Shaft	1
19.	S2617	Bottom Cover	1
20.	S2620	Pivot Piston	1
21.	1020-617	Dog	1
22.	1020-618	Dog	1
23.	W5/16"*1/4"L	Socket Head Cap Screw	2
24.	1020-312	Nut	4
25.	W1/8PT	Set Screw	4
26.	W1/4"*5/16"L	Set Screw	5



# VALVE ASS'Y

(1020, 1224, 1632)



# VALVE ASS'Y

(1020AH, 1224AH, 1632AH)

Index No.	Parts No.	Parts Name	Q'ty
1.	S2334	Flow Control Lever	1
2.	S2333	Flow Control Knob	1
3.	DH14*24*6	Dust Seal	2
4.	S2615	Upper Cover	2
5.	CB1512	DU Bush	2
6.	28.25*2.62	O-Ring	4
	26.7*2.62 (1632 series)	O-Ring	4
7.	UN15	U-Packing	3
	VP15238 (1632 series)	U-Packing	3
8.	S2612	Flow Control Shaft	1
9.	S2611	Flow Control Valve Body	1
10.	P21 & 25*2	O-Ring	2&2
11.	S2619	Side Cover	2
12.	W3/16"*5/8"L	Socket Head Cap Screw	24
13.	S2614	Bottom Cover	1
14.	S2332	Limit Switch Fixed Seat	1
15.	W5/16"*1"L	Socket Head Cap Screw	1
16.	ZE-NA2-2	Limit Switch	1
17.	M4*2 1/2"L	Round Head Cap Screw	2
18.	P8	O-Ring	4
19.	S2618	Adjusting Screw	1
20.	W1/4"*3/4"L	Socket Head Cap Screw	3
21.	S2335	Direction Control Arm	1
22.	S2616	Direction Control Shaft	1
23.	S2617	Bottom Cover	1
24.	1020-605	Cam	1
	1632-605 (1632 series)	Cam	1
25.	S2620	Pivot Piston	1
26.	1020-617	Dog	1
27.	1020-618	Dog	1
28.	W5/16"*1/4"L	Socket Head Cap Screw	2
29.	1020-312	Nut	4
30.	W1/8PT	Set Screw	4
31.	W1/4"*5/16"L	Set Screw	5

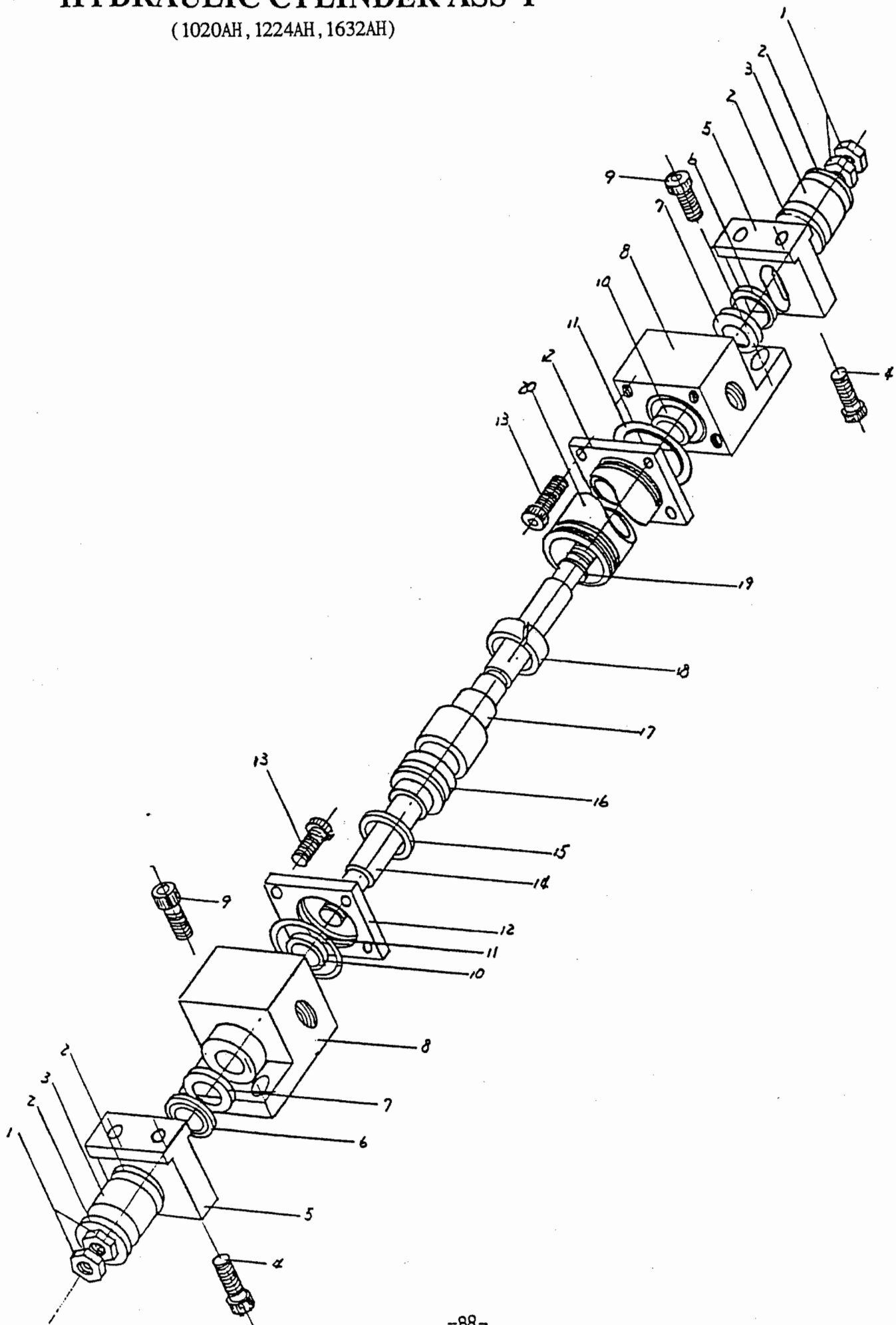
# VALVE ASS'Y

(1020AHD, 1224AHD, 1632AHD)

Index No.	Parts No.	Parts Name	Qty
1.	S2334	Flow Control Lever	1
2.	S2333	Flow Control Knob	1
3.	DH14*24*6	Dust Seal	2
4.	S2615	Upper Cover	2
5.	CB1512	DU Bush	2
6.	28.25*2.62	O-Ring	4
	26.7*2.62 (1632 series)	O-Ring	4
7.	UN15	U-Packing	3
	VP15238 (1632 series)	U-Packing	3
8.	S2612	Flow Control Shaft	1
9.	S2611	Flow Control Valve Body	1
10.	P21 & 25*2	O-Ring	2&2
11.	S2619	Side Cover	1
12.	W3/16"*5/8"L	Socket Head Cap Screw	24
13.	S2614	Bottom Cover	1
14.	S2332	Limit Switch Fixed Seat	1
15.	W5/16"*1"L	Socket Head Cap Screw	2
16.	ZE-NA2-2	Limit Switch	1
16.	Z-15GW2277B	Limit Switch	1
17.	M4*2 1/2"L	Round Head Cap Screw	2
18.	P8	O-Ring	4
19.	S2618	Adjusting Screw	1
20.	W1/4"*3/4"L	Socket Head Cap Screw	3
21.	S2335	Direction Control Arm	1
22.	S2616	Direction Control Shaft	1
23.	S2617	Bottom Cover	1
24.	1020-605	Cam	1
	1632-605 (1632 series)	Cam	1
25.	S2620	Pivot Piston	1
26.	1020-617	Dog	1
27.	1020-618	Dog	1
28.	W5/16"*1/4"L	Socket Head Cap Screw	2
29.	1020-312	Nut	4
30.	W1/8PT	Set Screw	4
31.	W1/4"*5/16"L	Set Screw	5

# HYDRAULIC CYLINDER ASS'Y

(1020AH, 1224AH, 1632AH)



# HYDRAULIC CYLINDER ASS'Y

(1020AH, 1224AH)

(DHA, HAS38)

Index No.	Parts No.	Parts Name	Qty
1.	M10*P1.25	Hexagonal Nut	4
2.	1020-629	Washer	4
3.	1020-628	Rubber pad	2
4.	W3/8"*1 3/4"L	Socket Head Cap Screw	4
5.	1020-619	Drawing Seat	2
6.	LBH 20*28*4.5*6	Dust Seal	2
7.	USH 20*28*5	U-Packing	2
8.	1020-A4-06	End Cover	2
9.	W5/16"*3/4"L	Socket Head Cap Screw	4
10.	MB 2012	Du Bush	2
11.	SPG 21	O-Ring	2
12.	1020-A4-08	Fixed Plate	2
13.	W1/4"*1"L	Socket Head Cap Screw	4
14.	1020-A3-01	Piston Rod	1
15.	P24	O-Ring	1
16.	1020-A4-09	Piston A	1
17.	1020-A4-09-1	Piston B	1
18.	φ 6* φ 25*9.7W	Slide Ring	1
19.	P16	O-Ring	1
20.	1020-A3-02	Cylinder	1

# HYDRAULIC CYLINDER ASS'Y

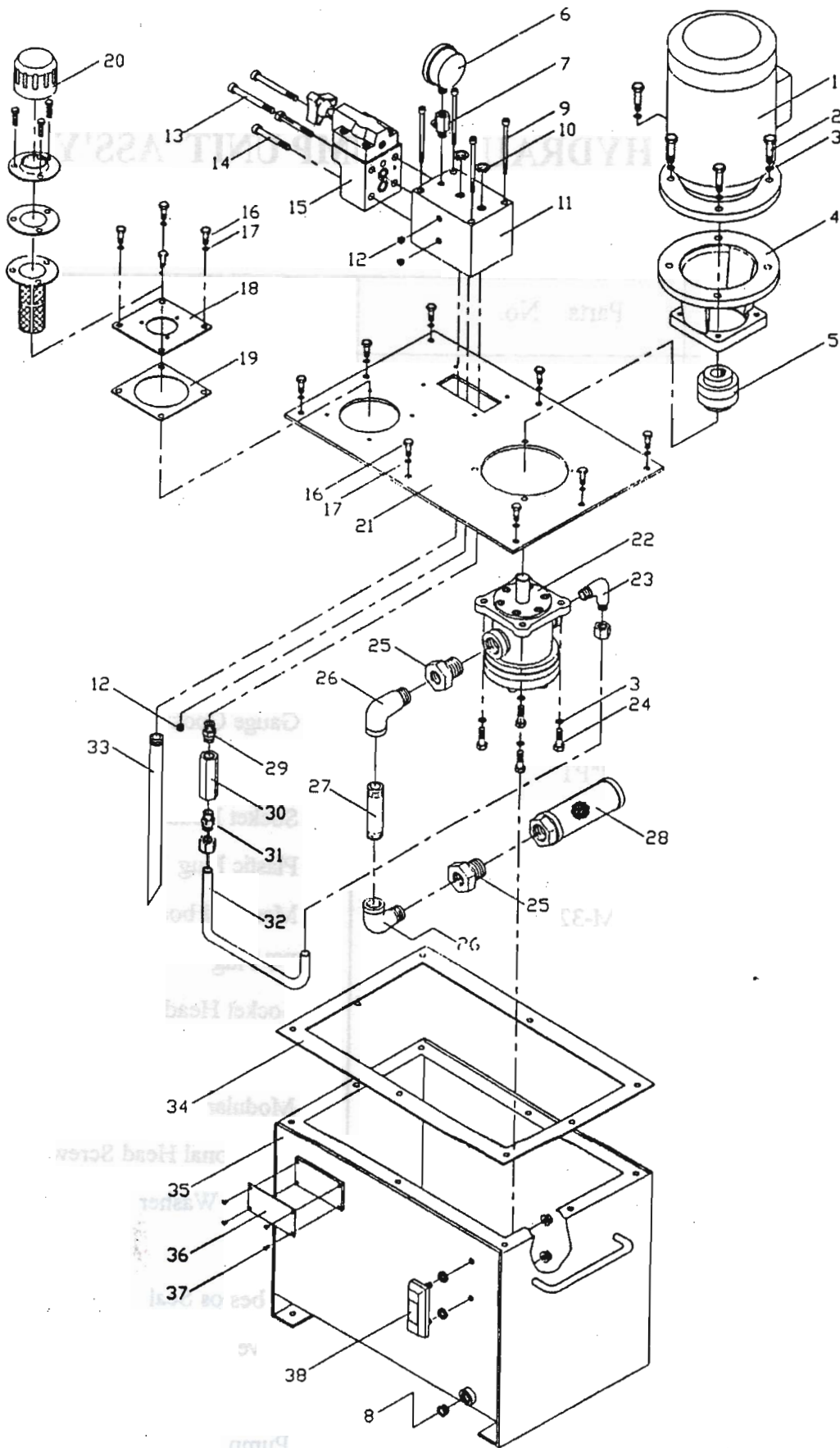
(1632AH,AHD)

Index No.	Parts No.	Parts Name	Q'ty
1.	M12*P1.25	Hexagonal Nut	4
2.	1632-629	Washer	4
3.	1632-628	Rubber pad	2
4.	W3/8"*1 3/4"L	Socket Head Cap Screw	4
5.	1632-619	Drawing Seat	2
6.	LBH 25*33*4.5*6	Dust Seal	2
7.	USH 25*33*5	U-Packing	2
8.	1632-A4-06	End Cover	2
9.	W5/16"*3/4"L	Socket Head Cap Screw	4
10.	1632-A3-03	Du Bush	2
11.	G 35	O-Ring	2
12.	1632-A4-08	Fixed Plate	2
13.	W1/4"*1"L	Socket Head Cap Screw	4
14.	1632-A3-01	Piston Rod	1
15.	P34	O-Ring	1
16.	1632-A4-09	Piston A	1
17.	1632-A4-09-1	Piston B	1
18.	φ 35* φ 40*9.7W	Slide Ring	1
19.	P21	O-Ring	1
20.	1632-A3-02	Cylinder	1



# HYDRAULIC PUMP UNIT ASS'Y

(1020AH)





# HYDRAULIC PUMP UNIT ASS'Y

(1020AH)

P. 10F2

Index No.	Parts No.	Parts Name	Q'ty
1.	1HP*6P	Motor	1
2.	M10*40L	Hexagonal Head Screw	1
3.	SWM10	Spring Washer	1
4.	EM-225	Flange	1
5.	E67	Coupling	1
6.	2 1/2"*70KG	Pressure Gauge	1
7.	1/4"PT	Gauge Cock	1
8.	1/2"PT	PT Plug	1
9.	M6*100L	Socket Head Cap Screw	1
10.	3/8"	Plastic Plug	1
11.	EM-323	Manifold board	1
12.	1/4"PT	PT Plug	1
13.	M12*90L	Socket Head Cap Screw	4
14.	M12*70L	Socket Head Cap Screw	8
15.	RF-G04-1	Modular Relief Valve	4
16.	M8*20L	Hexagonal Head Screw	1
17.	SWM8	Spring Washer	1
18.	EM-220	Cover	1
19.	EM-219	Asbestos Seal	1
20.	AB-1163	Cover Of Hydraulic Oil Filler	1
21.	EM-213	Cover Of Tank	14
22.	VPNC-F12.5	Pump	14
23.	3/4"PT* $\phi$ 15mm	LE Connector	1

# HYDRAULIC PUMP UNIT ASS'Y

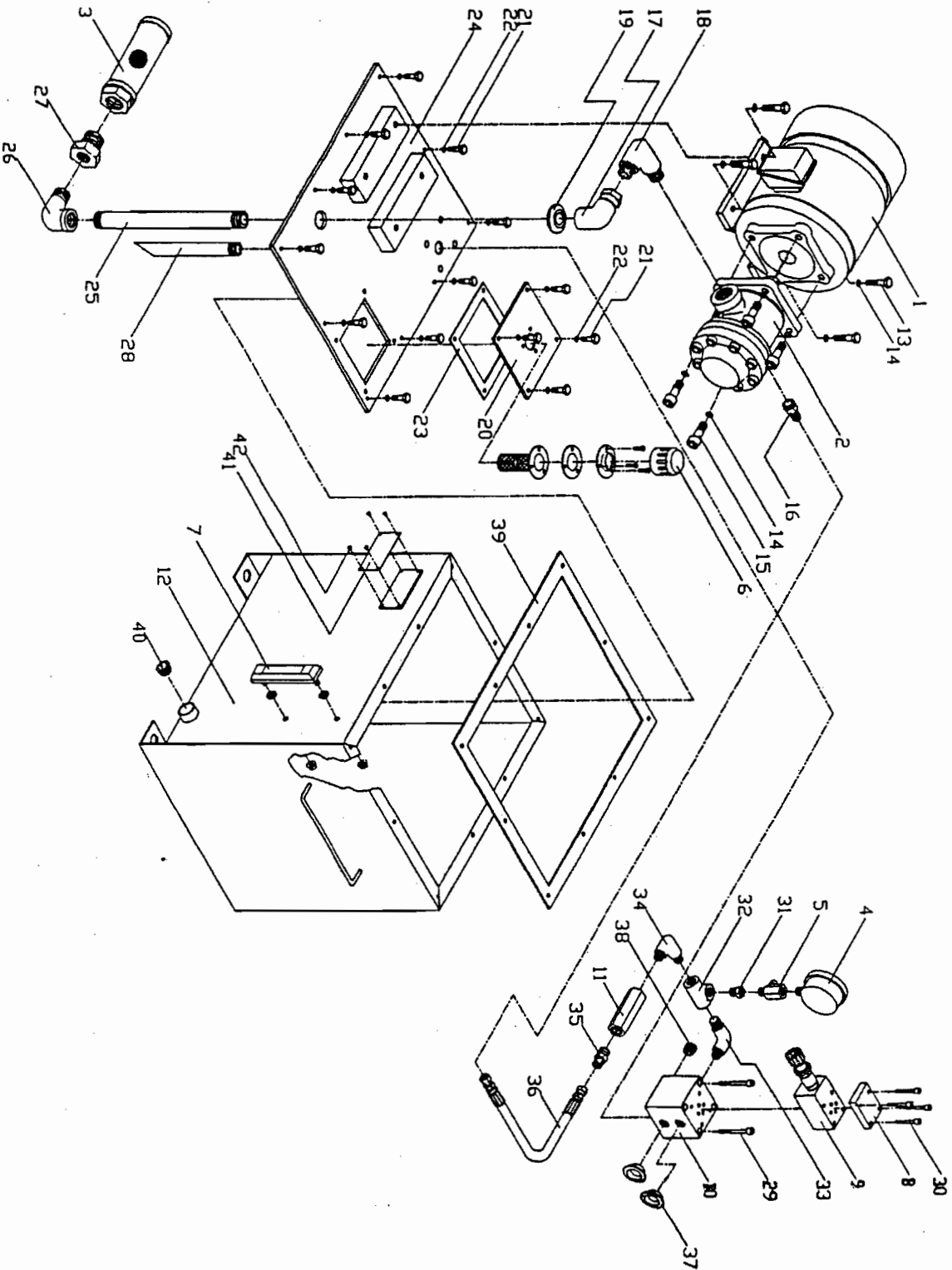
(1020AH)

P.2OF2

Index No.	Parts No.	Parts Name	Q'ty
24.	M10*30L	Socket Head Cap Screw	1
25.	3/4"PT(F)*1"PT(M)	Bushing	1
26.	3/4"PT(F)*3/4"PT(M)	Connector (90° Elbow)	2
27.	3/4"PT*110L	Zinc-Plate Pipe	1
28.	SS-1-100	Oil Filter	1
29.	1/2"PT*1/2"PT	Connector	2
30.	CI-T04-05	Check Valve	4
31.	1/2"PT* $\phi$ 15mm	LE Connector	1
32.	$\phi$ 15mm*2.0t	OST2 Pipe	1
33.	1/2"PT*210L	Zinc-Plate Pipe	1
34.	3/8"PT(F)	Asbestos Seal	1
35.	EM-213(540*350*350)	Hydraulic Tank	1
36.	NP-E01	Name Plate	1
37.	$\phi$ 2*6L	Rivet	1
38.	KS-3"	Oil Level Indicator	1

# HYDRAULIC PUMP UNIT ASS'Y

(1224AH)



# HYDRAULIC PUMP UNIT ASS'Y

(1224AH)

P. 1OF2

Index No.	Parts No.	Parts Name	Qty
1.	2HP*6P	Motor	1
2.	VPNC-F12-2-30	Pump	1
3.	SS-1-100	Oil Filter	1
4.	2 1/2"*70KG	Pressure Gauge	1
5.	1/4"PT	Gauge Cock	1
6.	AB-1163	Cover Of Hydraulic Oil Filler	1
7.	KS-5	Oil Level Indicator	1
8.	M02 P-A	Cover	1
9.	MRF-02P-0-K	Modular Relief Valve	1
10.	EM-143	Manifold board	1
11.	CI-T04-10	Check Valve	1
12.	EM214(560*500*460)	Hydraulic Tank	1
13.	M10*30L	Hexagonal Head Screw	4
14.	SWM10	Spring Washer	8
15.	M10*30L	Socket Head Cap Screw	4
16.	3/4"PT*3/8"PS	Connector	1
17.	3/4"PT(F)*3/4"PS(M)	Connector (90° Elbow)	1
18.	1"PT*3/4"PS	Connector (90° Elbow)	1
19.	ST-06	Dust Rubber	1
20.	CP-01	Cover	1
21.	M8*20L	Hexagonal Head Screw	14
22.	SWM8	Spring Washer	14
23.	SS-C01	Asbestos Seal	1
24.	CT-C01	Cover Of Tank	1
25.	3/4"PT*420L	Zinc-Plate Pipe	1

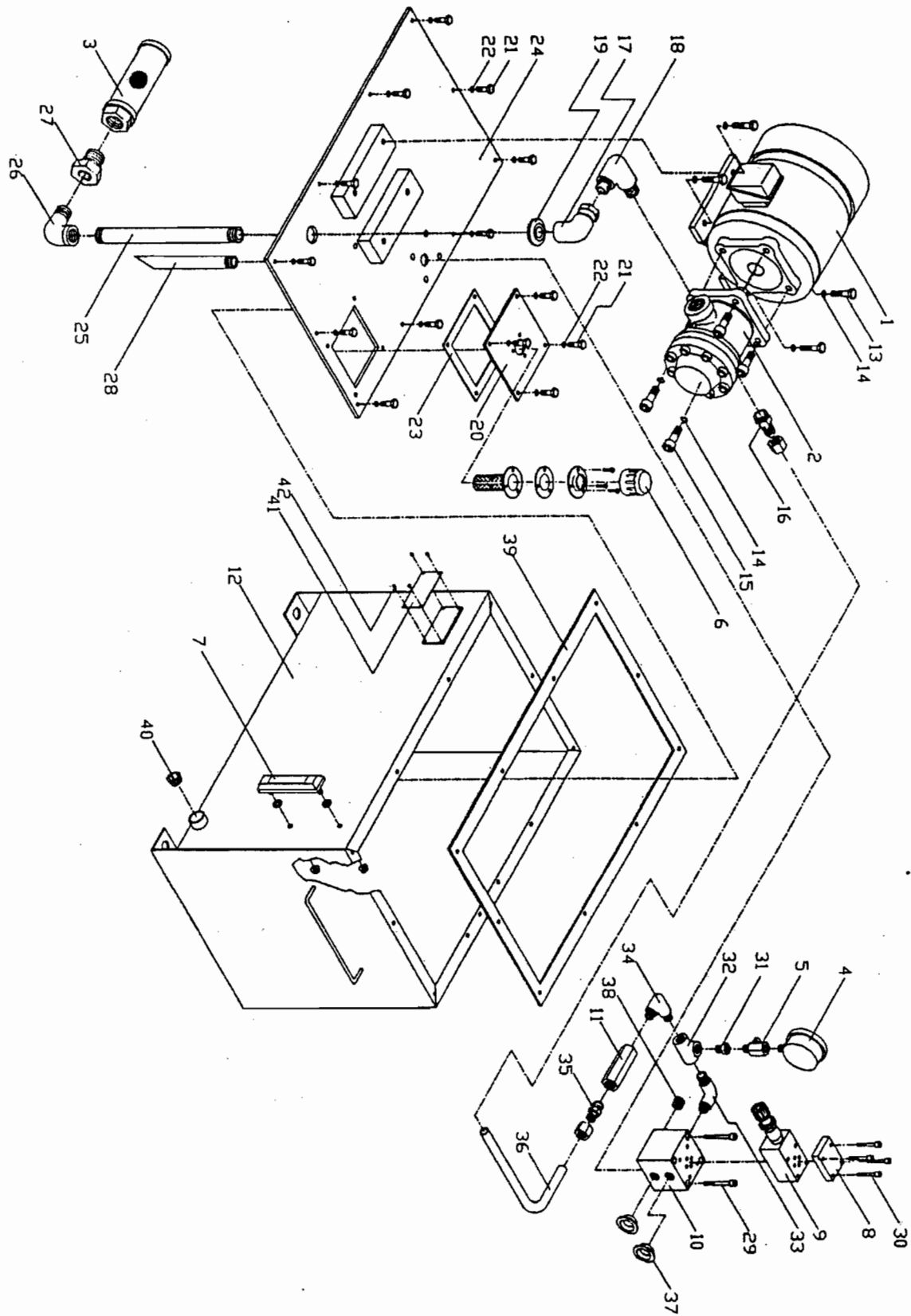
# HYDRAULIC PUMP UNIT ASS'Y

(1224AH)

P. 20F2

Index No.	Parts No.	Parts Name	Q'ty
26.	3/4"PT(F)*3/4"PT(M)	Connector (90° Elbow)	2
27.	3/4"PT(F)*1"PT(M)	Bushing	1
28.	1/2"PT*420L	Zinc-Plate Pipe	1
29.	M6*65L	Socket Head Cap Screw	2
30.	M5*60L	Socket Head Cap Screw	4
31.	1/4"PT*3/8PT	Socket	1
32.	3/8"PT(F)	Connector (3 ways)	1
33.	3/8"PT*3/8"PT	Connector (90° Elbow)	1
34.	3/8"PT*1/2"PT	Connector (90° Elbow)	1
35.	1/2"PT*3/8"PS	Connector	1
36.	3/8"PS*3/8"PS*290L	High Pressure Tube	1
37.	3/8"	Plastic Plug	2
38.	3/8"PT	PT Plug	1
39.	SS-C02	Asbestos Seal	1
40.	1/2"PT	PT Plug	1
41.	NP-C01	Name Plate	1
42.	φ 2*6L	Rivet	4

# HYDRAULIC PUMP UNIT ASS'Y (1632AH)



# HYDRAULIC PUMP UNIT ASS'Y (1632AH)

P. 1OF2

Index No.	Parts No.	Parts Name	Qty
1.	2HP*6P	Motor	1
2.	VPNC-F12-2-30	Pump	1
3.	SS-1-100	Oil Filter	1
4.	2 1/2"*70KG	Pressure Gauge	1
5.	1/4"PT	Gauge Cock	1
6.	AB-1163	Cover Of Hydraulic Oil Filler	1
7.	KS-5	Oil Level Indicator	1
8.	M02 P-A	Cover	1
9.	MRF-02P-0-K	Modular Relief Valve	1
10.	EM-143	Manifold board	1
11.	CI-T04-10	Check Valve	1
12.	EM214(800*550*340)	Hydraulic Tank	1
13.	M10*30L	Hexagonal Head Screw	4
14.	SWM10	Spring Washer	8
15.	M10*30L	Socket Head Cap Screw	4
16.	3/4"PT* $\phi$ 15mm	LE Connector	1
17.	3/4"PT(F)*3/4"PS(M)	Connector (90° Elbow)	1
18.	1"PT*3/4"PS	Connector (90° Elbow)	1
19.	ST-06	Dust Rubber	1
20.	CP-02	Cover	1
21.	M8*20L	Hexagonal Head Screw	14
22.	SWM8	Spring Washer	14
23.	SS-D02	Asbestos Seal	1
24.	CT-D02	Cover Of Tank	1
25.	3/4"PT*360L	Zinc-Plate Pipe	1

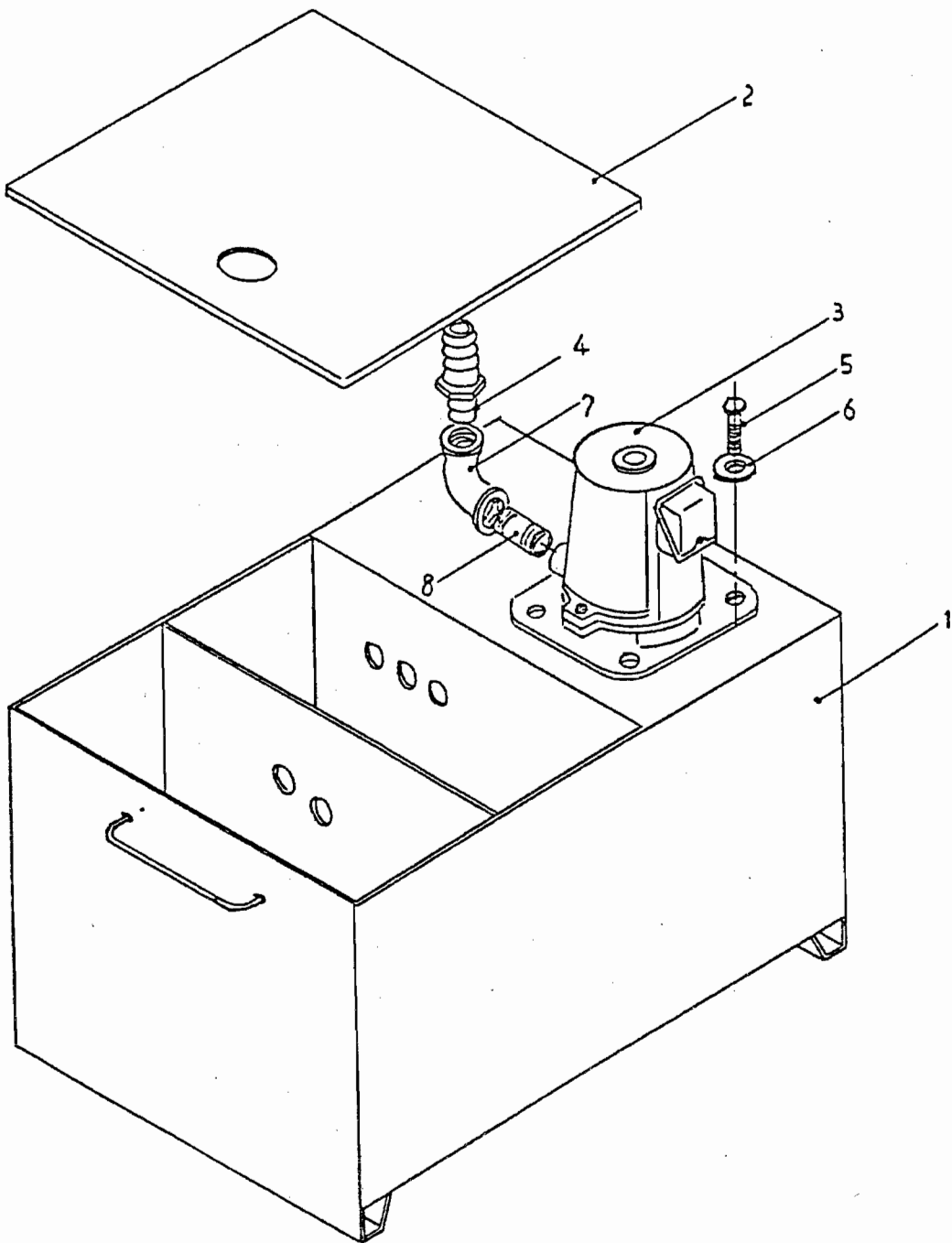


# HYDRAULIC PUMP UNIT ASS'Y (1632AH)

P.2OF2

Index No.	Parts No.	Parts Name	Q'ty
26.	3/4"PT(F)*3/4"PT(M)	Connector (90° Elbow)	2
27.	3/4"PT(F)*1"PT(M)	Bushing	1
28.	1/2"PT*210L	Zinc-Plate Pipe	1
29.	M6*65L	Socket Head Cap Screw	2
30.	M5*60L	Socket Head Cap Screw	4
31.	1/4"PT*3/8PT	Socket	1
32.	3/8"PT(F)	Connector (3 ways)	1
33.	3/8"PT*3/8"PT	Connector (90° Elbow)	1
34.	3/8"PT*1/2"PT	Connector (90° Elbow)	1
35.	1/2"PT* $\phi$ 15mm	LE Connector	1
36.	$\phi$ 15mm*2.0t	OST2 Pipe	1
37.	3/8"	Plastic Plug	2
38.	3/8"PT	PT Plug	1
39.	SS-D02	Asbestos Seal	1
40.	1/2"PT	PT Plug	1
41.	NP-D01	Name Plate	1
42.	$\phi$ 2*6L	Rivet	4

# COOLANT SYSTEM ASS'Y

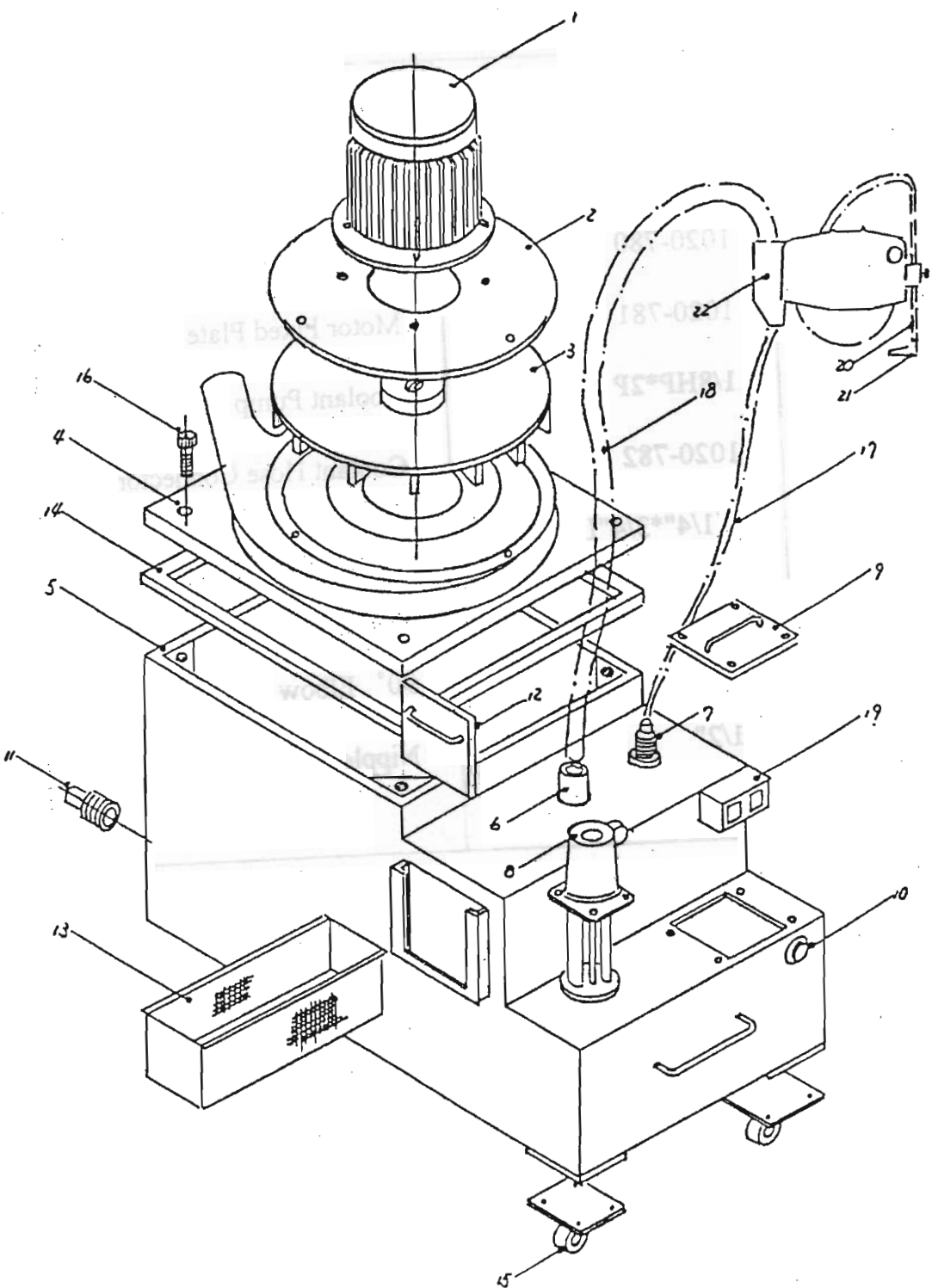


# COOLANT SYSTEM ASS'Y

Index No.	Parts No.	Parts Name	Q'ty
1.	1020-780	Coolan Tank	1
2.	1020-781	Motor Fixed Plate	1
3.	1/8HP*2P	Coolant Pump	1
4.	1020-782	Coolant Hose Connector	1
5.	W1/4"*3/4"L	Hexagonal Head Screw	4
6.	1/4"	Washer	4
7.	1/2"	90° Elbow	1
8.	1/2"	Nipple	1

# DUST-SUCTION COOLING SYSTEM ASS'Y

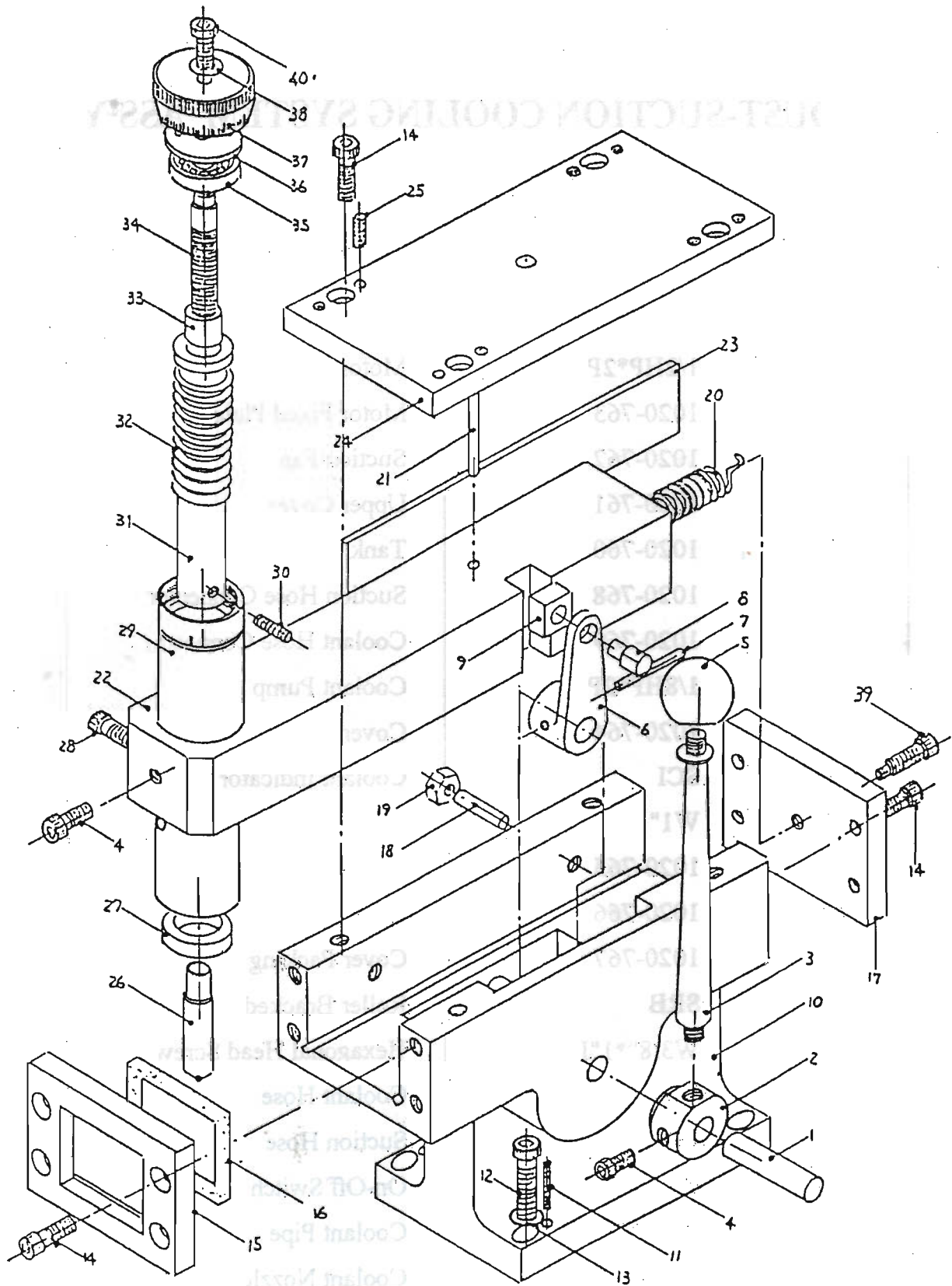
COOLANT SYSTEM ASS'Y



# DUST-SUCTION COOLING SYSTEM ASS'Y

Index No.	Parts No.	Parts Name	Q'ty
1.	1/2HP*2P	Motor	1
2.	1020-763	Motor Fixed Plate	1
3.	1020-762	Suction Fan	1
4.	1020-761	Upper Cover	1
5.	1020-760	Tank	1
6.	1020-768	Suction Hose Connector	1
7.	1020-769	Coolant Hose Connector	1
8.	1/8HP*2P	Coolant Pump	1
9.	1020-764	Cover	1
10.	SCI	Coolant Indicator	1
11.	W1"	Plug	1
12.	1020-765	Filter Cover	1
13.	1020-766	Filter	1
14.	1020-767	Cover Packing	1
15.	SRB	Roller Bracked	4
16.	W3/8"*1"L	Hexagonal Head Screw	4
17.	SCH	Coolant Hose	1
18.	SSH	Suction Hose	1
19.	SS	On-Off Switch	1
20.	1020-770	Coolant Pipe	1
21.	1020-708	Coolant Nozzle	1
22.	1020-771	Dust-Collector	1

# PARALLEL DRESSER ASS'Y



PARALLEL DRESSER (Optional Accessory)

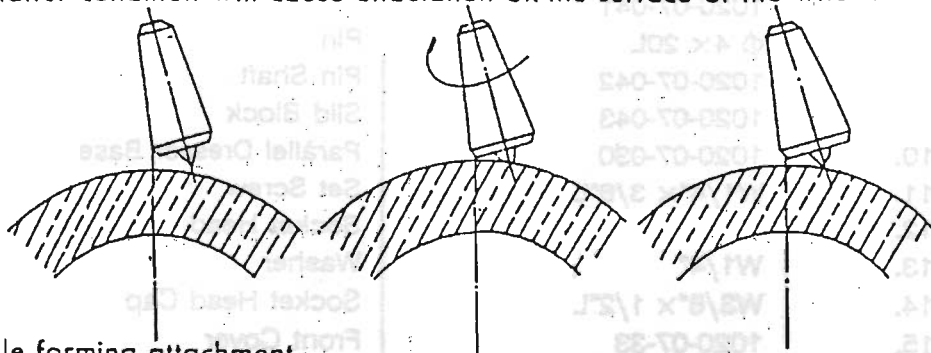
Index No.	Parts No.	Parts Name	Q'ty
1.	1020-07-037	Lever Shaft	1
2.	1020-07-038	Shaft Bushing	1
3.	1020-07-039	Lever	1
4.	W1/4"x 1/2"L	Socket Head Cap Screw	2
5.	1020-07-040	Knob	1
6.	1020-07-041	Arm	1
7.	φ 4× 20L	Pin	1
8.	1020-07-042	Pin Shaft	1
9.	1020-07-043	Slid Block	1
10.	1020-07-030	Parallel Dresser Base	1
11.	W1/4"x 3/8"L	Set Screw	2
12.	W1/4"x 1 1/2"L	Socket Head Cap Screw	4
13.	W1/4"	Washer	4
14.	W3/8"x 1/2"L	Socket Head Cap Screw	12
15.	1020-07-33	Front Cover	1
16.	1020-07-035	Oil-Immersed Pad	1
17.	1020-07-034	Rear Cover	1
18.	W1/4"x 1/2"L	Set Screw	3
19.	W1/4"	Nut	3
20.	1020-07-044	Spring	1
21.	φ 5× 24L	Pin	1
22.	1020-07-031	Slider	1
23.	1020-07-036	Gib	1
24.	1020-07-032	Upper Cover	1
25.	W1/4"x 3/8"L	Socket Head Cap Screw	8
26.	1020-07-045	Diamond Tip	1
27.	RZ-20	U-Packing	1
28.	W3/8"x 1"L	Socket Head Cap Screw	1
29.	1020-07-046	Adapter	1
30.	1020-07-047	Set Screw	1
31.	1020-07-048	Diamond Tip Holder	1
32.	1020-07-049	Spring	1
33.	1020-07-050	Copper bush	1
34.	1020-07-051	Leadscrew	1
35.	# 6200ZZ	Bearing	1
36.	1020-07-052	Cover	1
37.	1020-07-53	Graduation dial	1
38.	1020-07-054	Washer	1
39.	1020-07-055	Spring Fix Screw	1
40.	W3/8"x 1/2"L	Socket Head Cap Screw	1



# 17. USE OF THE OPTIONAL ATTACHMENT

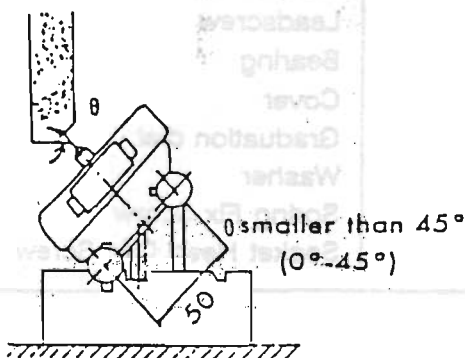
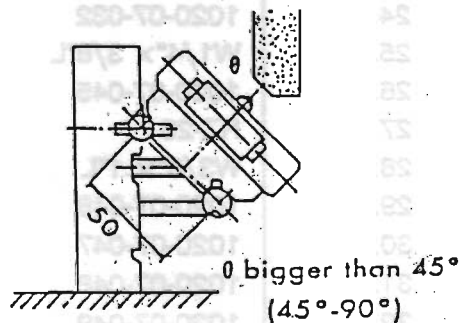
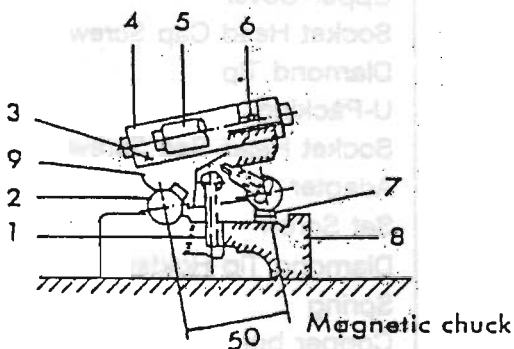
## (a). Parallel Dressing attachment

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



## (b). Angle forming attachment

- (1) Let the Attachment be attracted to the magnetic chuck, keeping a  $90^\circ$  right angle between the attachment and the wheel. The magnetic chuck should be kept low.
- (2) The value in question will be the Sine of the angle times 50. That is  $B = \text{Sin}\theta \times 50$
- (3) Get a gauge Block the thickness of which equals that of B (or make one)
- (4) Put this gauge Block under the base of the Sine Bar stand. Tighten with the fastening bolts and the produce is complete.

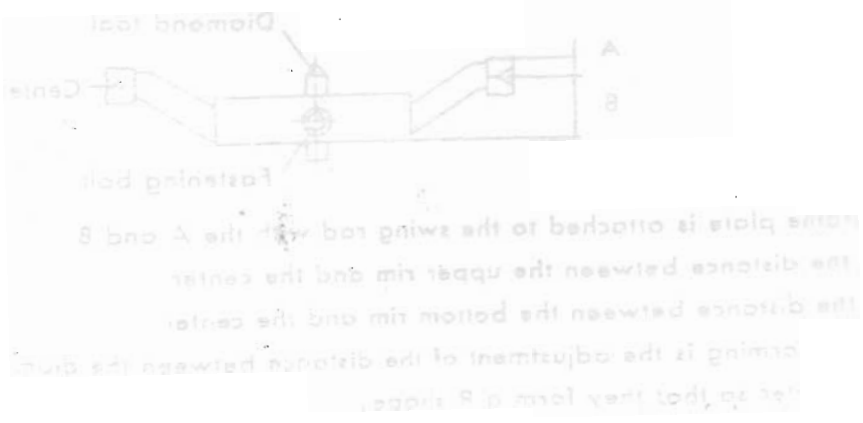


1. Fastening bolt
2. Mandrel
3. Slide adjustment bolt
4. Slide base
5. Handle
6. Diamond fixed hole
7. Block gauge
8. Build-in base
9. Sine Bar stand

(5). Degree and block gauge thickness conversion table

Deg.	Sin.	Block gauge thickness	Deg.	Sin.	Block gauge thickness	Deg.	Sin.	Block gauge thickness
1°	0.0175	0.875	22°	0.3746	18.730	43°	0.6820	34.100
2°	0.0349	1.745	23°	0.3907	19.535	44°	0.6947	34.735
3°	0.0523	2.615	24°	0.4067	20.335	45°	0.7071	35.355
4°	0.0698	3.490	25°	0.4226	21.130			
5°	0.0872	4.360	26°	0.4384	21.920			
6°	0.1045	5.225	27°	0.4540	22.700			
7°	0.1219	6.095	28°	0.4695	23.475			
8°	0.1392	6.960	29°	0.4848	24.240			
9°	0.1564	7.820	30°	0.5000	25.000			
10°	0.1736	8.680	31°	0.5150	25.750			
11°	0.1908	9.540	32°	0.5299	26.495			
12°	0.2079	10.395	33°	0.5446	27.230			
13°	0.2250	11.250	34°	0.5592	27.960			
14°	0.2419	12.095	35°	0.5736	28.680			
15°	0.2588	12.940	36°	0.5878	29.390			
16°	0.2756	13.780	37°	0.6018	30.090			
17°	0.2924	14.620	38°	0.6157	30.785			
18°	0.3090	15.450	39°	0.6293	31.465			
19°	0.3256	16.280	40°	0.6428	32.140			
20°	0.3420	17.100	41°	0.6561	32.805			
21°	0.3584	17.920	42°	0.6691	33.455			

• The value of Block gauge thickness must times 2 when apply this table to Sine Bar attachment.



### (c). Sine Bar

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

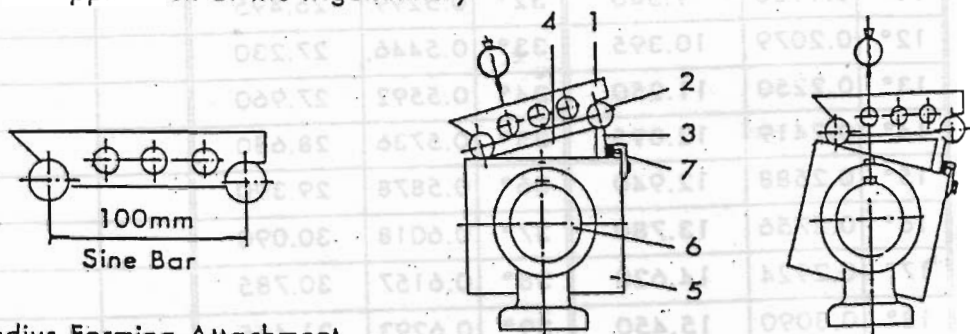
(1) The value in question equals the Sine of the angle times 100,  $B = \sin\theta \times 100$

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

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

(4) Press the dial gauge against the surface of the Sine Bar and 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

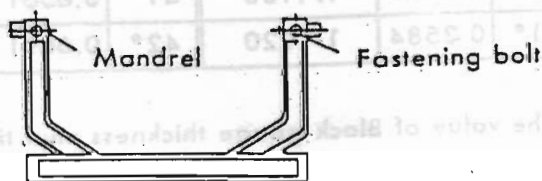
1. Mandrel
2. Sine Bar
3. gauge Block
4. Application of the trigonometry
5. Inclinable Magnetic Chuck
6. Mandrel of the Magnetic Chuck
7. Stop block



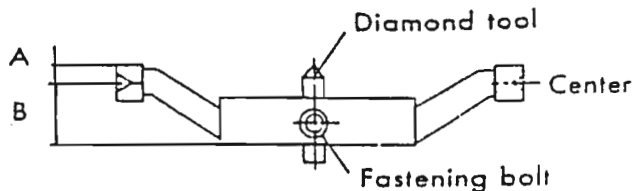
### (d). Radius Forming Attachment

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



A name plate is attached to the swing rod with the A and B

A: the distance between the upper rim and the center

B: the distance between the bottom rim and the center

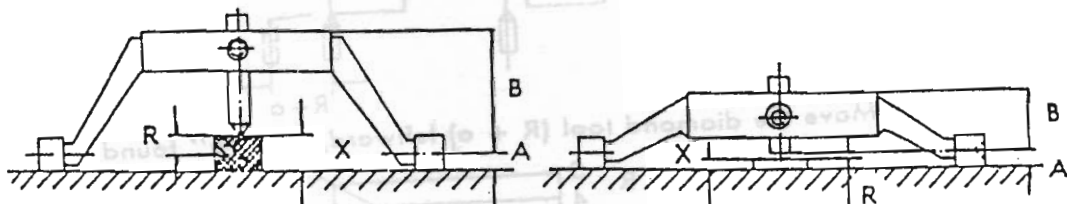
The R forming is the adjustment of the distance between the diamond tool and the rod center so that they form a R shape.

3) To determine the concave and convex R:

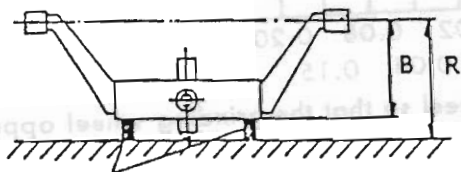
a. If the tool is parallel to the center line, it equals to OR.

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  $R = X - A$

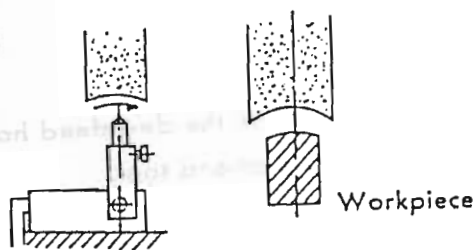
c. To determine the smaller concave R;  $R = A - X$



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



Same thickness gauge block (X)

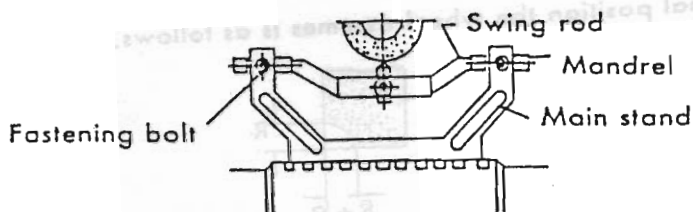


e. Note:

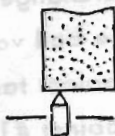
1. The base and side of the grinding wheel should be well-dressed.
2. The Radius Forming Attachment shall be parallel to the grinding wheel.
3. The diamond tool shall be parallel to the Radius Forming Attachment.

(4) Operation of the Radius forming attachment:

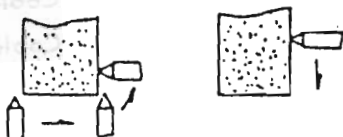
a. Find the center of the grinding wheel, then secure the work table.



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. Now turn the cross feed handwheel to dress the grinding wheel, and turn the calibration reading on the down feed back to zero.

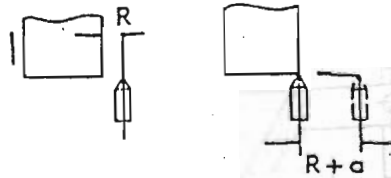


c. Turn the diamond tool 90° and elevate it into a proper position (greater than the R size in question)

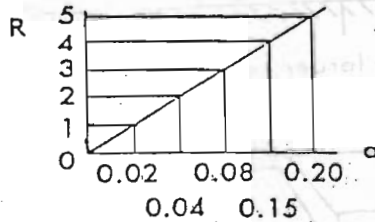




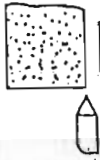
- d. Elevate the grinding wheel so that it stays away from the diamond tool and the wheel is in such a position such that the distance between the side of the wheel and the center of the Diamond tool is just  $R$ .



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



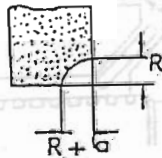
- f. Turn the downfeed handwheel so that the grinding wheel approaches the diamond tool.



- g. Turn the swing rods  $90^\circ$  each time, inching  $0.05\text{mm}$  per step till the  $R$  is determined.

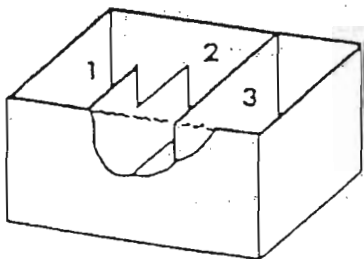


- h. The final position the wheel assumes is as follows.



### (e).Coolant System

Insert the power source plug in socket (at the rear side of the electric control box). Press the pushbutton switch to start the coolant pump, the pump should rotate in a clockwise direction. If not, interchange any of the two cords of the three-cord cable. Adjust coolant flow by turning the ball valve to a suitable rate. Cooling water collected from the table will return to coolant tank through return hose. It will then be filtered in the coolant tank by turns of cabinet #1,2,3.



- Coolant tank capacity: 40 liters
- Coolant pump: 1/8 HP x2P

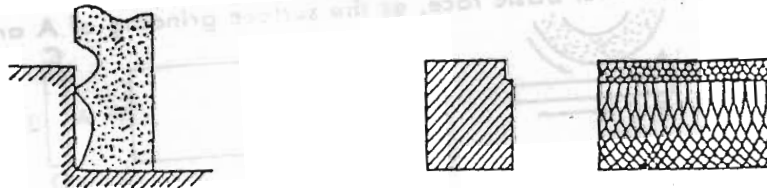
(f). Common cases in Side Grinding

(1)



In the case shown in the figure above, the side-grinding wheel and the work have a smaller contact surface, so that the 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 has not been 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)



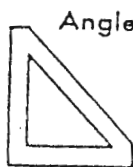
The "Relief Angle" of the wheel is lower than the surface of the work, so that the work face becomes two sections, the upper section resembling that in (3) and the lower section in (1). Now it is necessary to enlarge the "Relief Angle" part so that it will be higher than the face of the work.

(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:

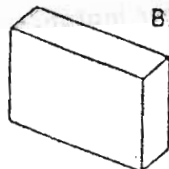


(g). Right Angle Grinding

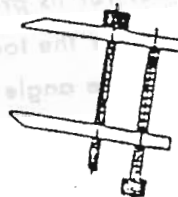
(1) Tools



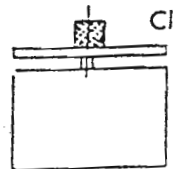
Angle gauge



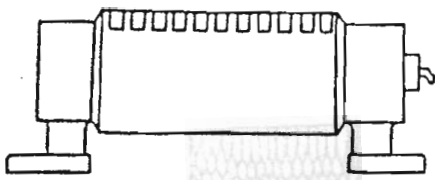
Block



Clamp



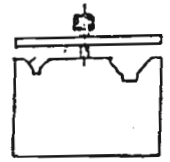
Clamp



Inclined Magnetic Chuck



gauge Block,



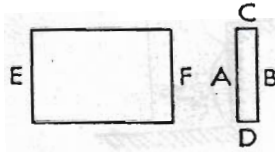
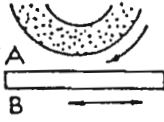
Clamp

(2) Use of the jigs and tools: take the grinding of the block of six faces A, B, C, D, E, F.

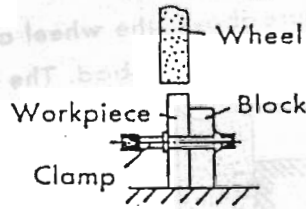
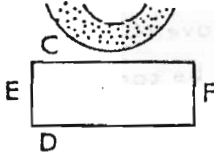
For example:

a. Under 200mm:

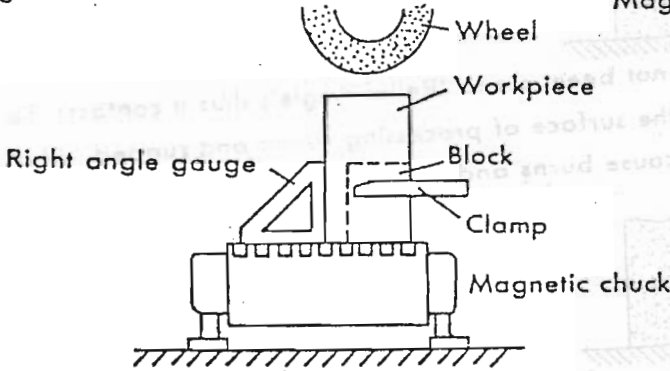
- Grinding of the first basic face, or the surface grinding of A and B,



- Grinding of C and D

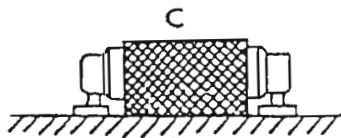


- Grinding of E and F

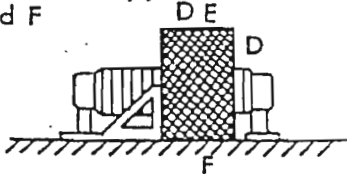


b. Over 200 mm:

- 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 the operator for its precision. For instance, whether the burrs after grinding is done well, whether the tools are kept clean, whether the work table are kept clean, the accuracy of the angle gauge, etc. all will have a direct influence over the precision of the product.