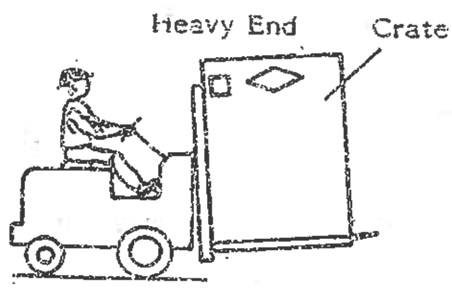
Specifications	KGS-306AH	KGS-306AHD
Working surface of table	300 x 650 mm (11-13/16x25-9/16")	
Maximum surface ground	310 x 650 mm (12-3/16 x 25-9/16")	
Maximun distance between table and spindle center	550 mm (21-5/8")	
Table speed (Hydraulic)	5-23 M/min (16-75ft/min)	
Auto matic crossfeed of saddle per stroke, variable	0.1-5.5 mm (0.04-0.3")	
Power crossfeed of saddle	1010 mm/min (39-3/4 in/min)	
Operating floow space (L x W xH)	2580x1570x1830(102 x 62 x 72")	
Crossfeed on handwheel 1 revolution 1 graduation	4.0 mm (0.2") 0.02 mm (0.001")	
Vertical downfeed on handwheel 1 revolution 1 graduation	2.0 mm (0.1") 0.01 mm (0.001")	0.5 mm (0.0025") 0.001 mm(0.00005")
Automatic downfeed increment variable in 5 steps.		0.005 - 0.0025
Wheel speed (rmp), 60 Hz.	1740 rpm (1450)	
Wheel dimension (O.D. x T. x I.D.)	305 x 31.75 x 127 (12 x $1\frac{1}{4}$ x 5")	
Spindle motor (V-3 grade)	3 HP x 4P	
Hydraulic pump motor	2 HP	
Automatic crossfeed motor	1/5 HP x 6P	
Power elevation motor		1/5 HP x 6P
Coolant pump	1/8 HP	
Machine net weight	1650 kgs (3630 lbs)	
Machine gross weight	1850 kgs (4070 lbs)	
Packing dimension (W x D x H)	(99 3/16" x 82-11/16" x 96-7/16") 2520 x 2100 x 2450	

CONTENTS

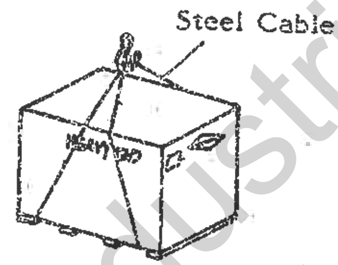
* THIS MACHINE HAS BEEN FULLY TESTED, ADJUSTED AND INSPECTED FOR CORRECT ALIGNMENT AND OPERATION PRIOR TO SHIPMENT. IN TRANSIT OR INSTALLATION, PLEASE ENSURE THAT THE MACHINE IS NOT BUMPED WHEN BEING ROLLED OR SET DOWN TO AVOID ANY FAILURE.

A . Transit

By Fork Lift



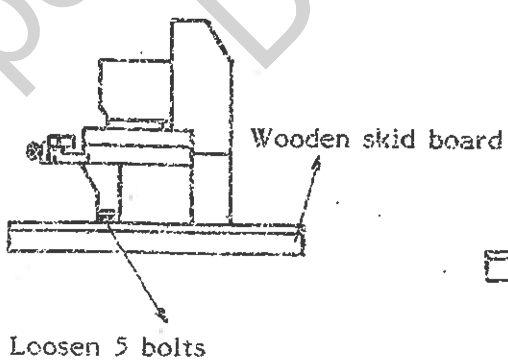
By Hoist or Chain Block

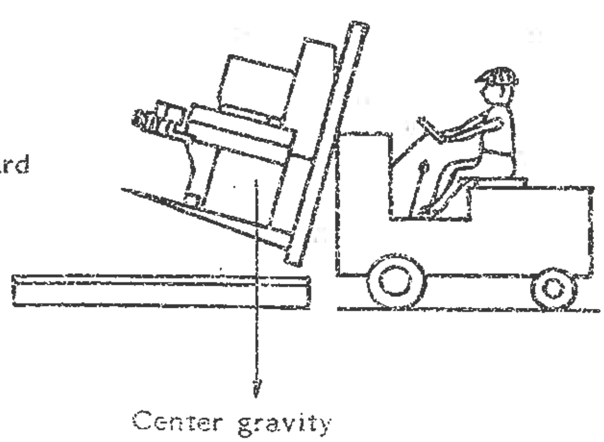


New Weight: 1650 kgs (3630 lbs)
Gross Weight: 1850 kgs (4070 lbs)

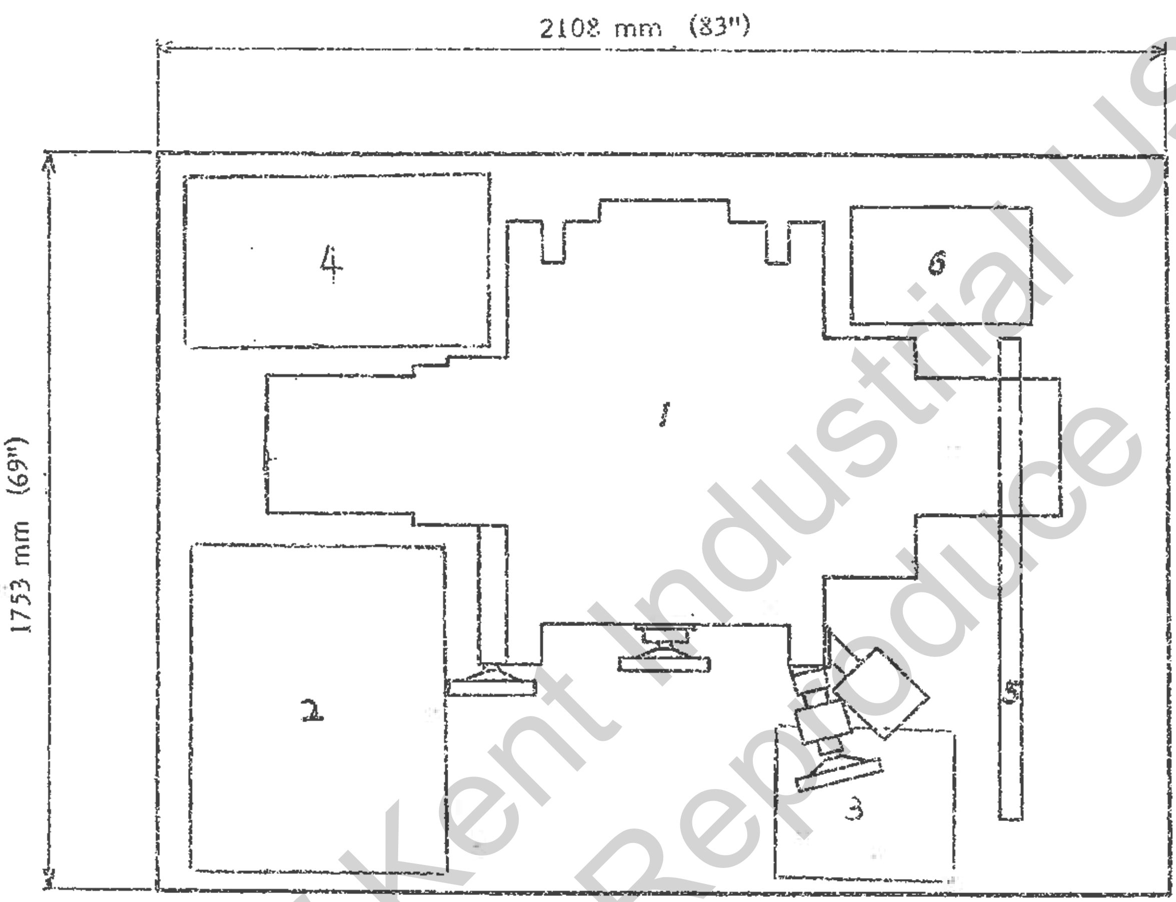
B . Unpacking

1. When unpacking the crate, starts from the upper cover, then follow the sequence of front, rear, left and right.
2. Do not use hammer to break down the crate, please use nail extruder in stead of.
3. To avoid damaging the paint or machine, please pay more attention when take away the wooden covers.
4. Loosen the fixing screws before lifting machine.





PACKING DIAGRAM



1. Machine base
2. Hydraulic tank
3. Grinding wheel and optional accessories
4. Dust suction coolant system
5. Splash guard (front and rear)
6. Standard accessories

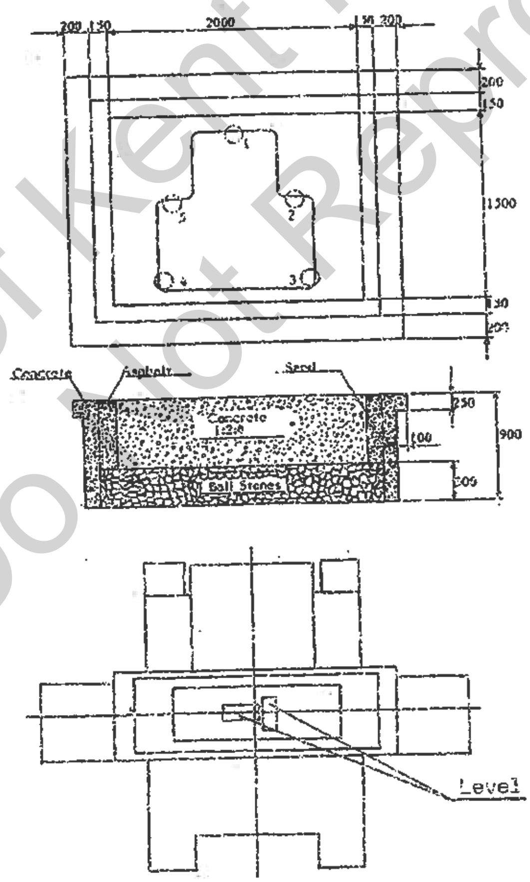
C . Choice of site

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

The grinding machine should be handle just as carefully as a jig-borer. After all, extreme precision is demanded of both types of machine.

Grinding machines are often found between milling, shaping, drilling and even slotting machines, without any thought of the consequences of such planning. In such cases, it is impossible to achieve good surface finishes, as the vibrations from the milling machines or the jerks from the reversal of the shaper stroke, etc. are transmitted to the grinding machine. Chatter marks can be found on the ground surface, which are due to these extraneous influences.

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



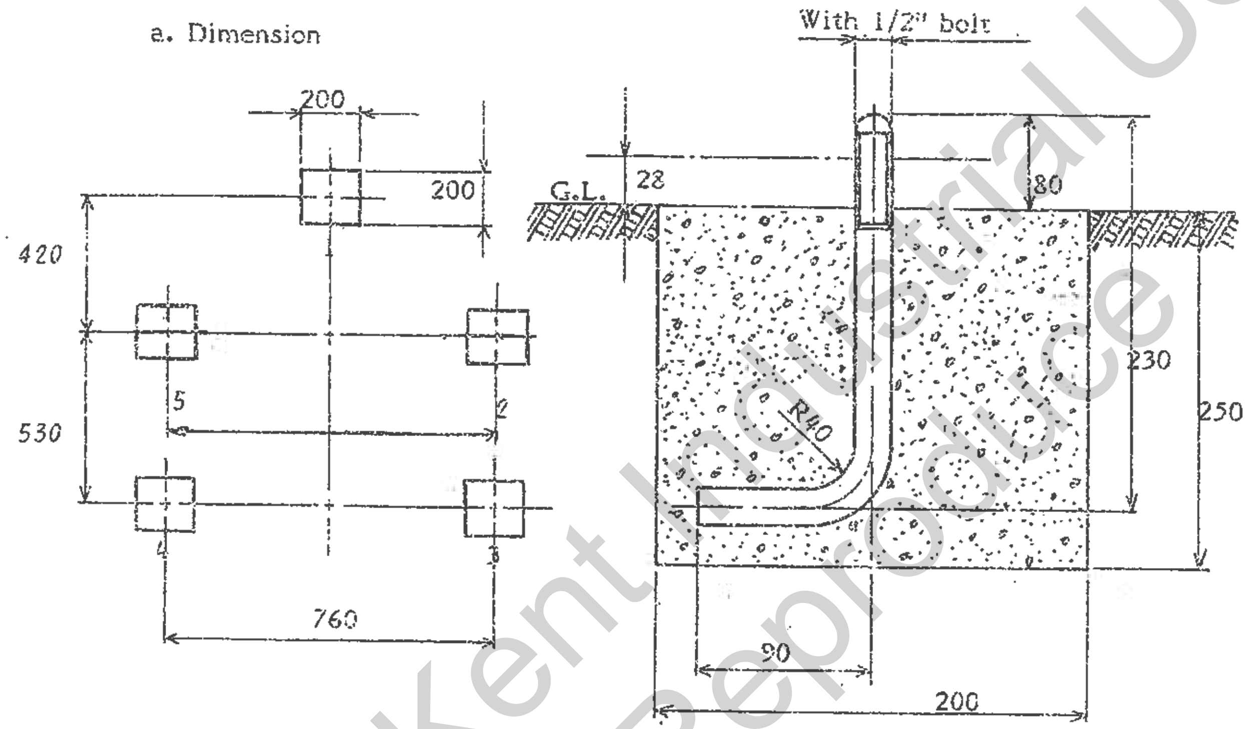
D . Installation

(1) Power consumption

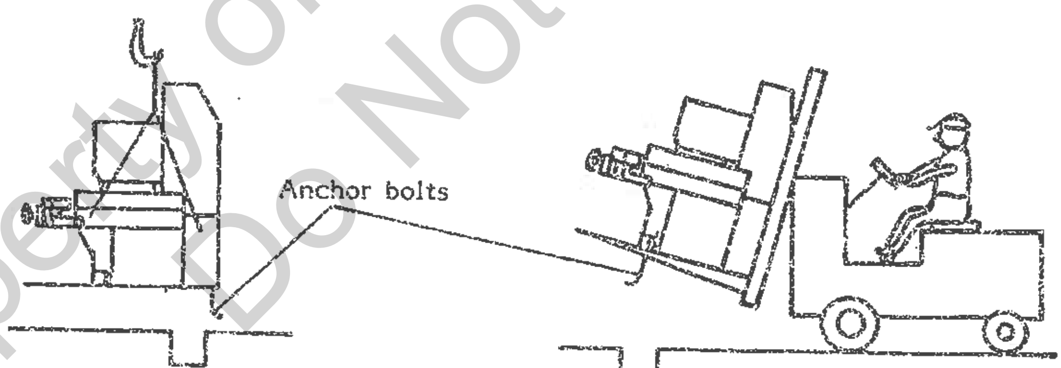
Machine Base	Ele. Mag. Chuck	Dust-collector	Total
5 KW	0.4KW	0.3KW	5.7KW

(2) Foundation

a. Dimension



b. Use the anchor bolts



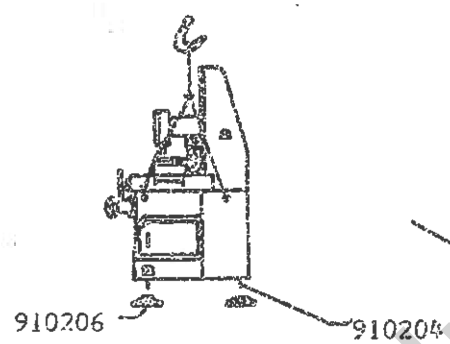
* Lock the anchor bolts on the machine by nuts, and let the thread portion at least 30mm for adjust.
* Lay down the machine slowly to aim anchor bolts at foundation holes.
* Levelling the machine by taper blocks.
* Fill up the holes with concrete.

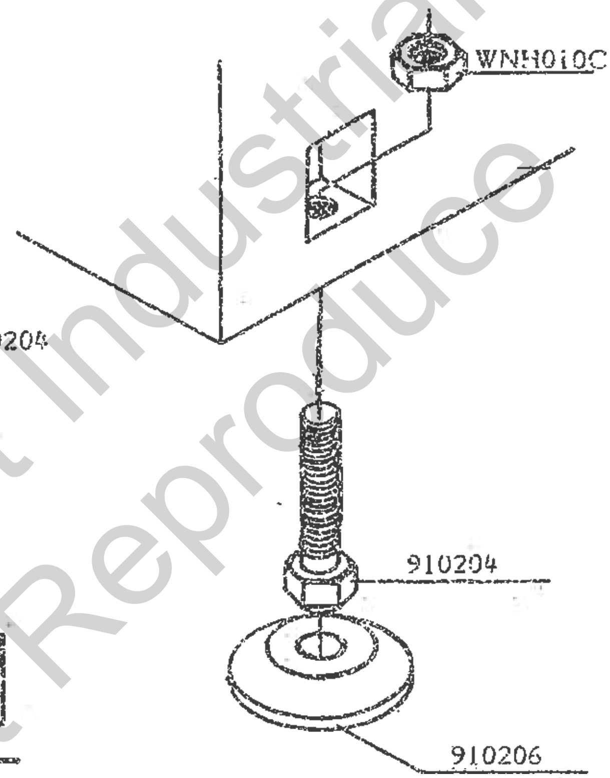
c. Use the levelling pads and levelling screws

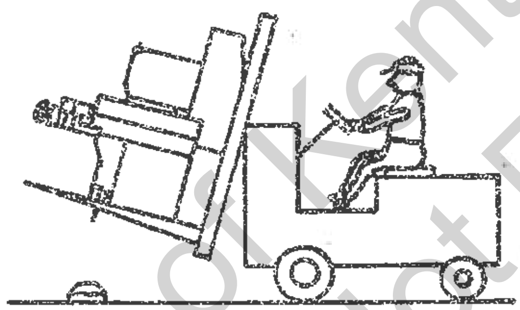
* Screw the levelling screws (911204) on the machine base with two nuts. For easy leveling and more steady of the machine, make screws as deep as possible

* Lay down the machine slowly to let the round head of levelling screws fall into the center hole of levelling pads (910206).

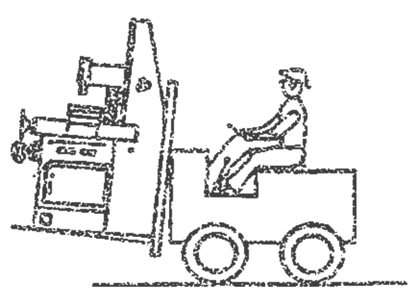
* Levelling the machine.







CAUTION: If you use Fork Lift in stead of Hoist, please lift as figure shown under:



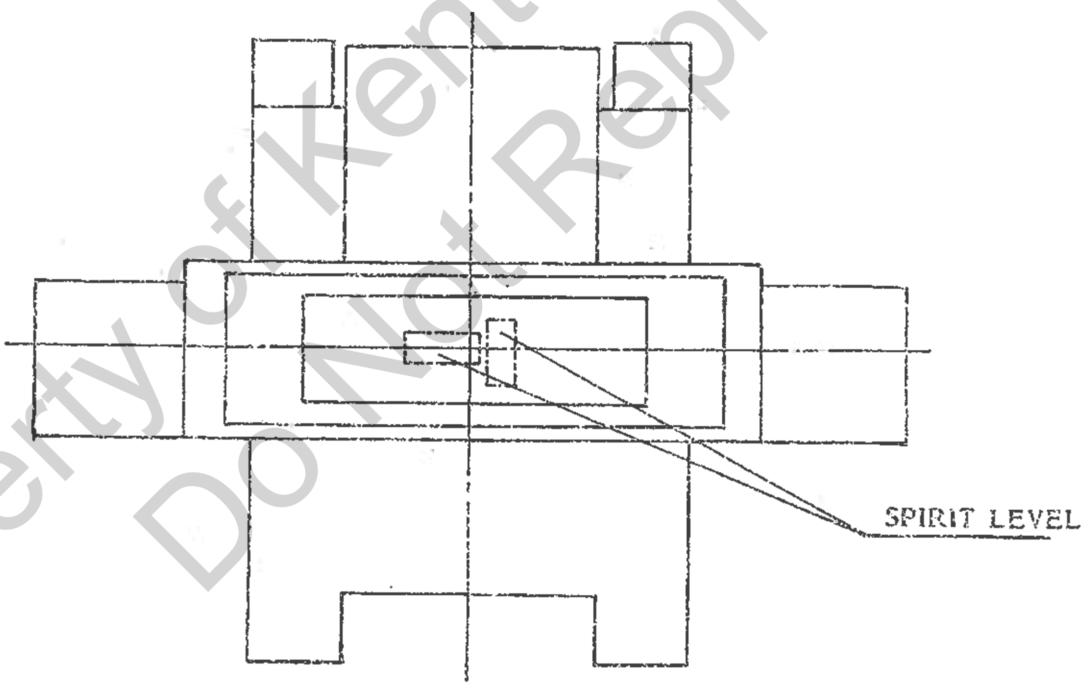
(3). Levelling the Machine

As following procdures:

(a). Use Longitudinal handwheel to let table at the middle position.

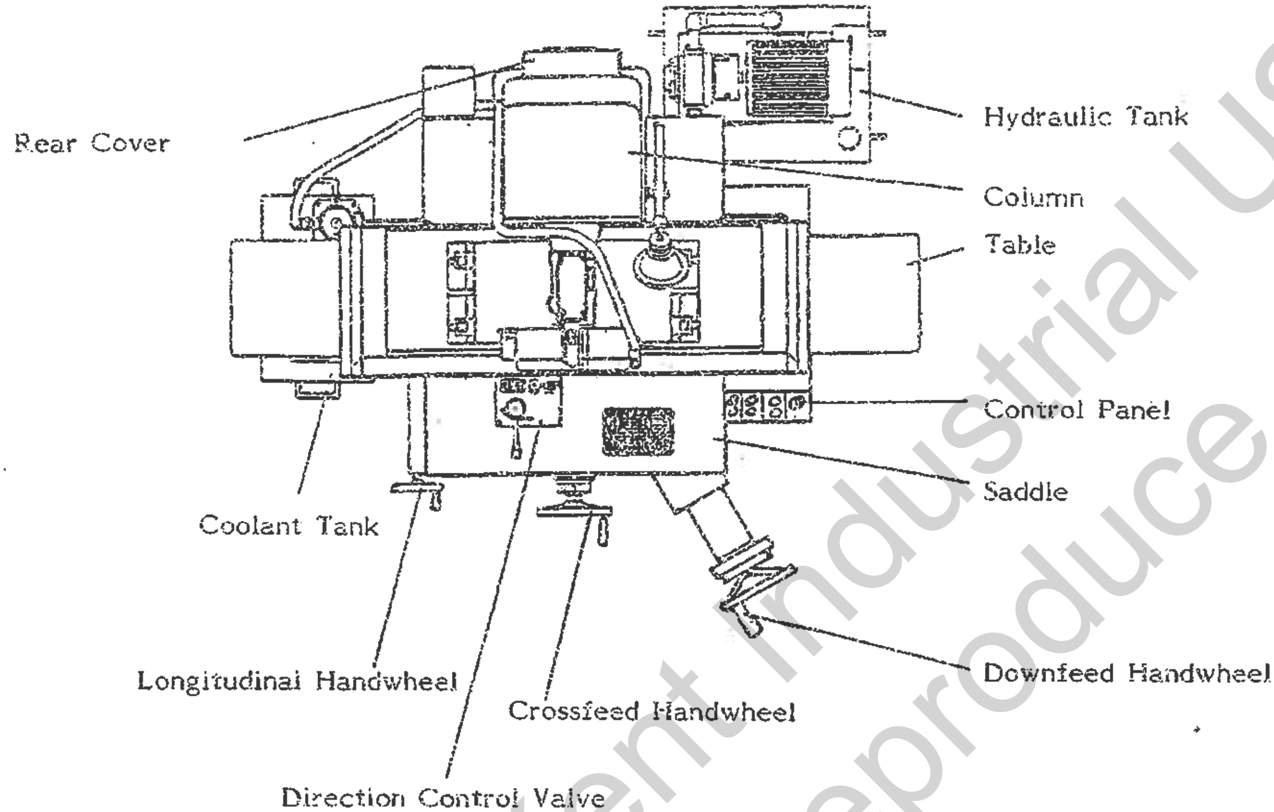
(b). And then, use crossfeed handwheel to let Saddle at the middle position.

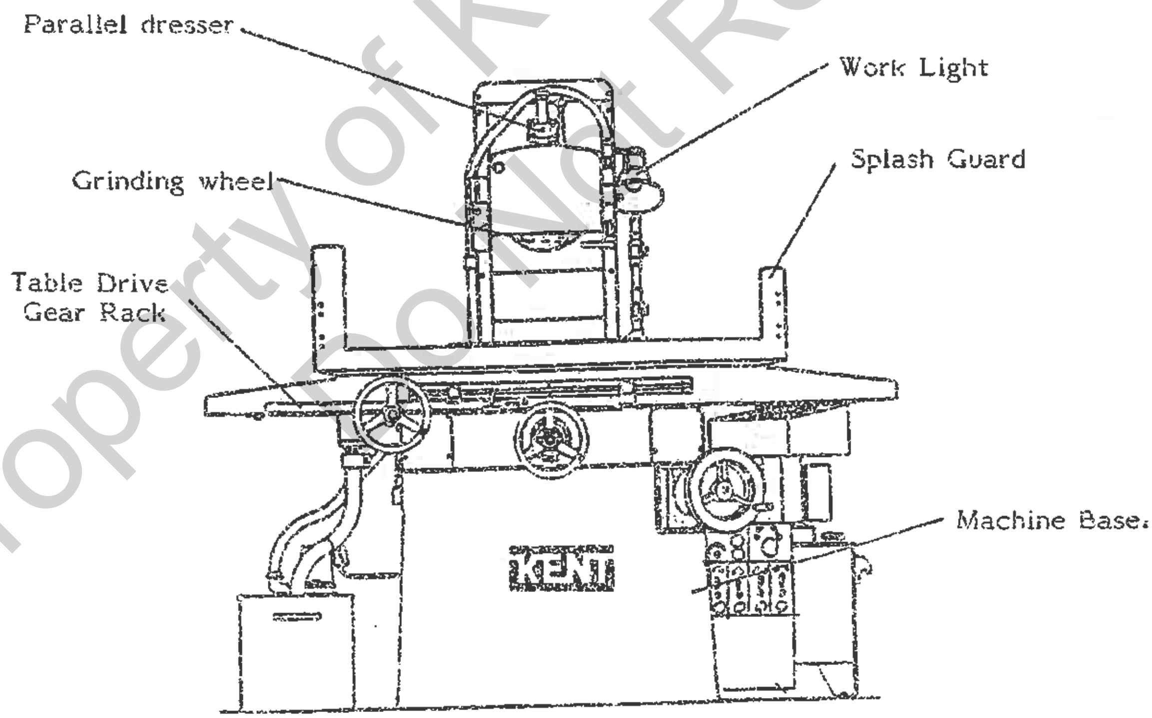
(c). Levelling the machine by a (or two) Spirit Level in Longitudinal and latitudinal direction, as Fig. shown.



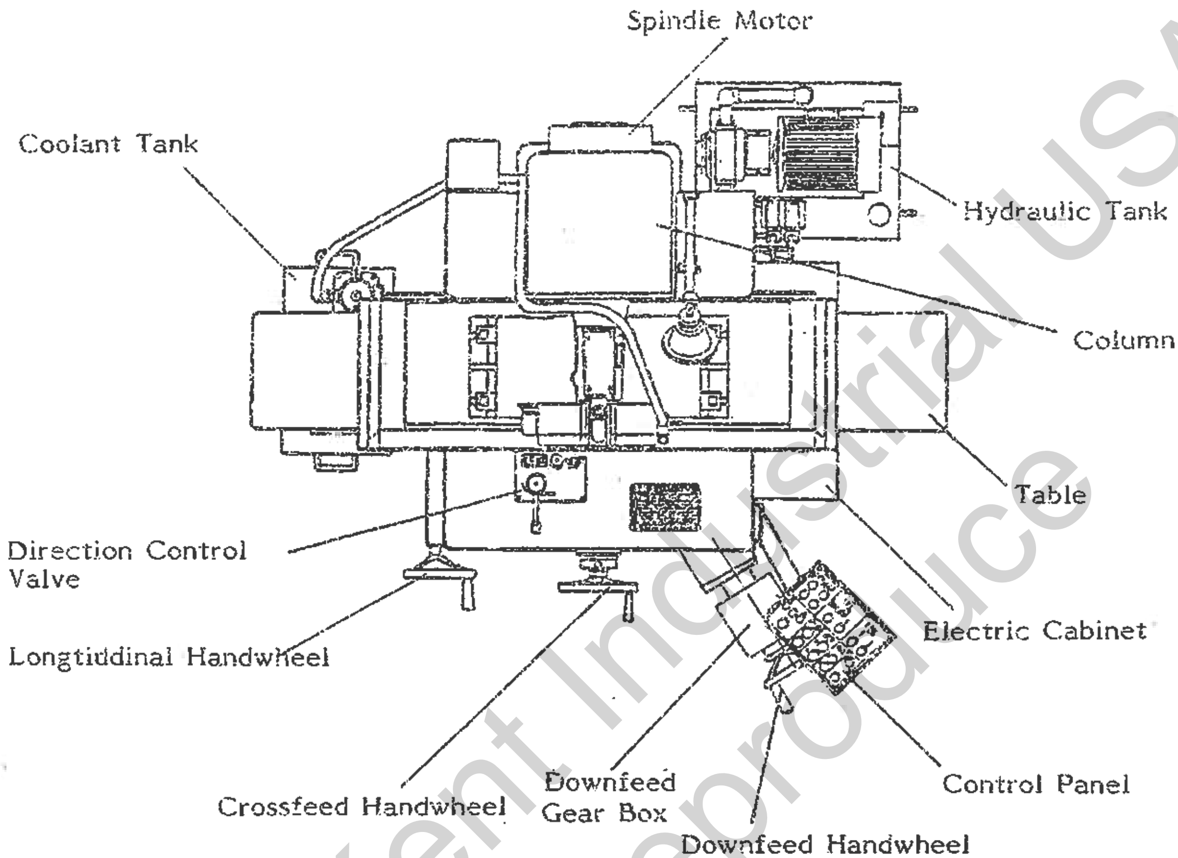
(4). Contour and Nomenclature

a). KGS-306AH

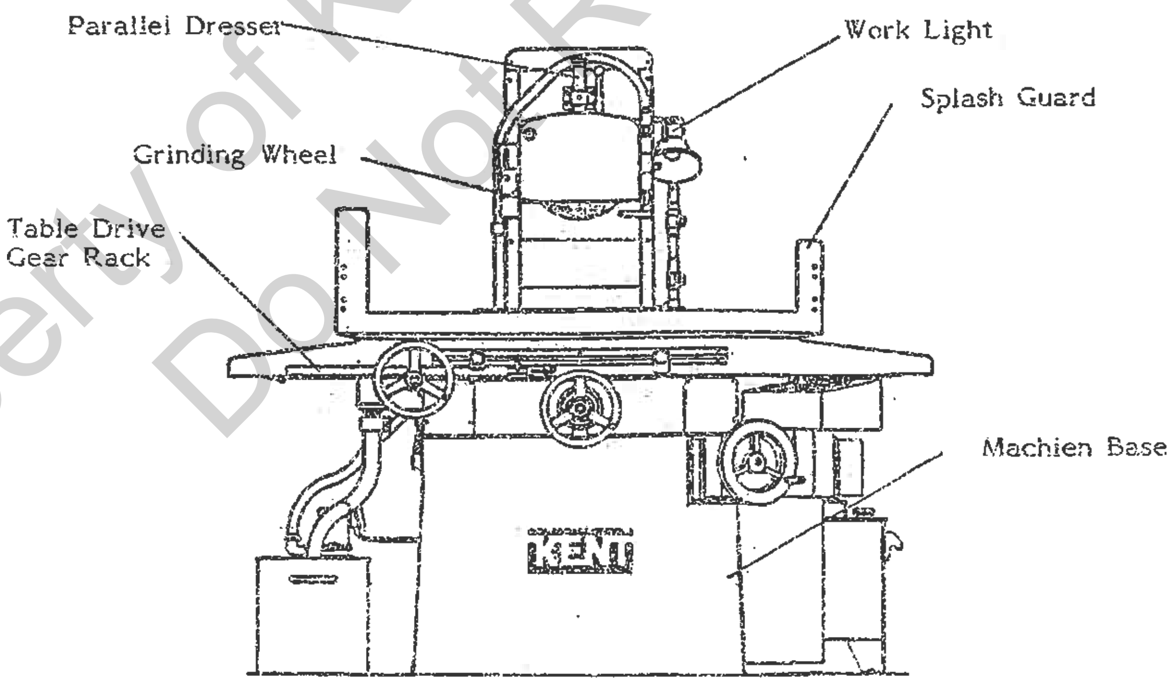




b). KGS-306AHD

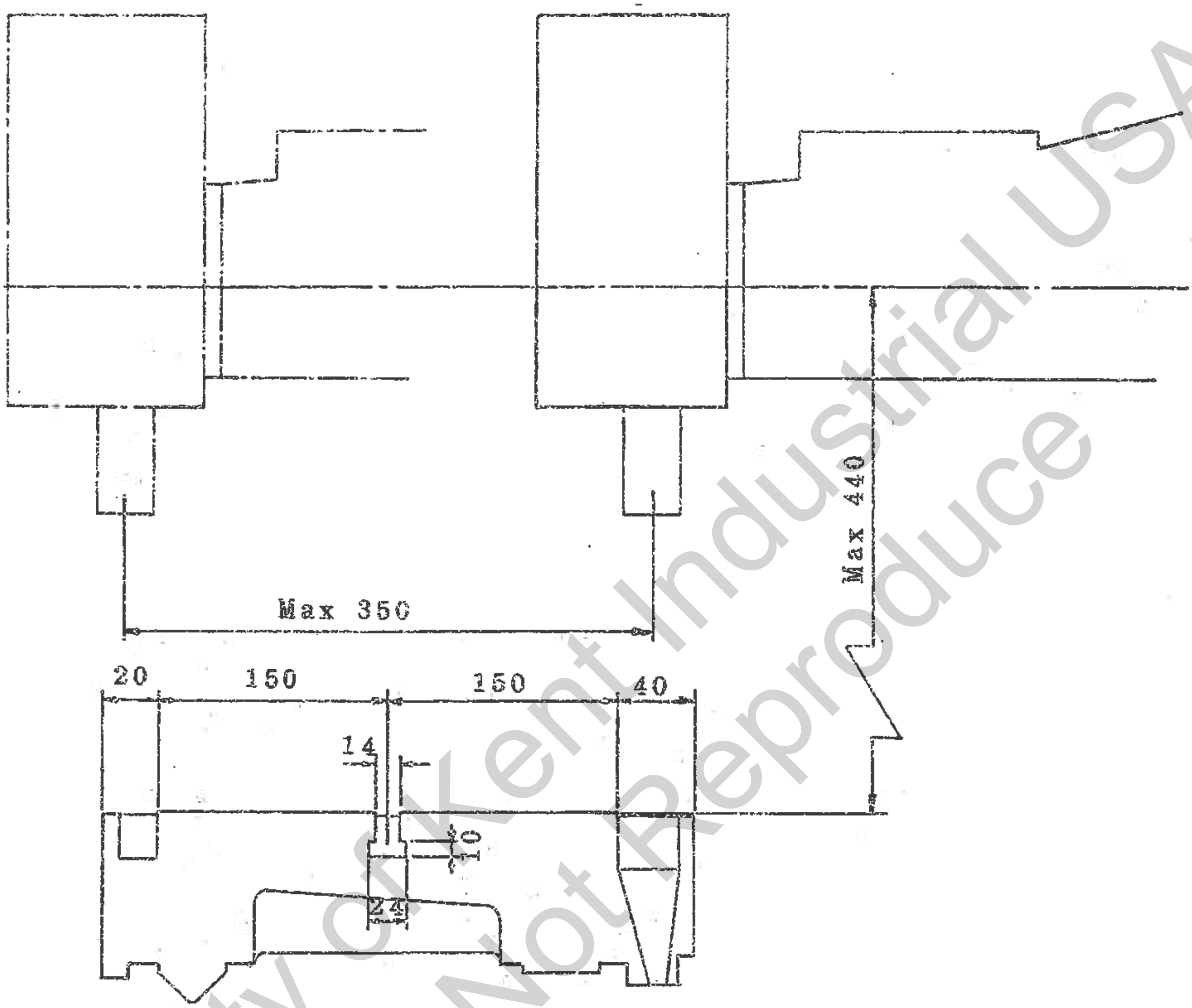


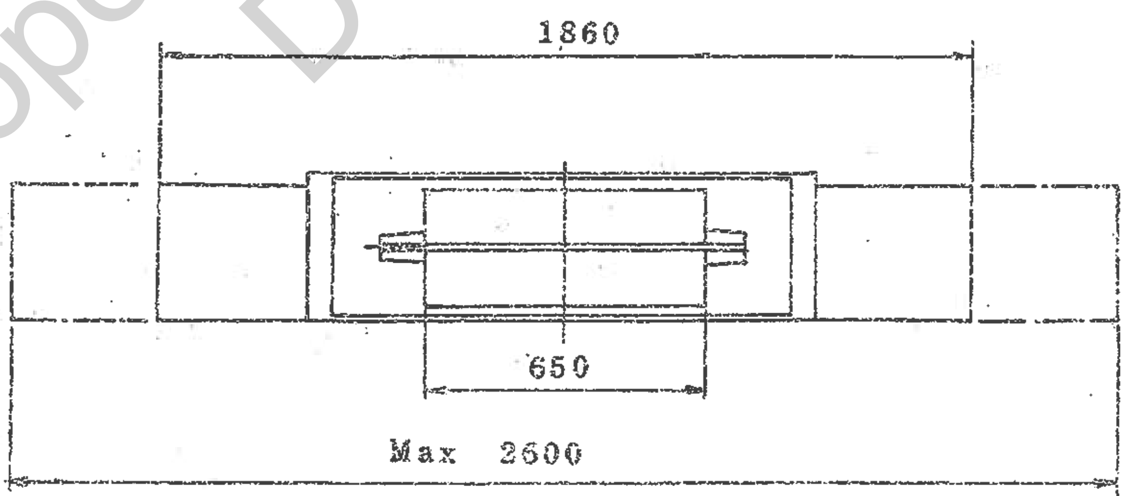
Spindle Motor
Coolant Tank
Hydraulic Tank
Column
Table
Direction Control Valve
Electric Cabinet
Longtiddinal Handwheel
Crossfeed Handwheel
Downfeed Gear Box
Control Panel
Downfeed Handwheel



Parallel Dresser
Work Light
Splash Guard
Grinding Wheel
Table Drive Gear Rack
Machien Base
KENT

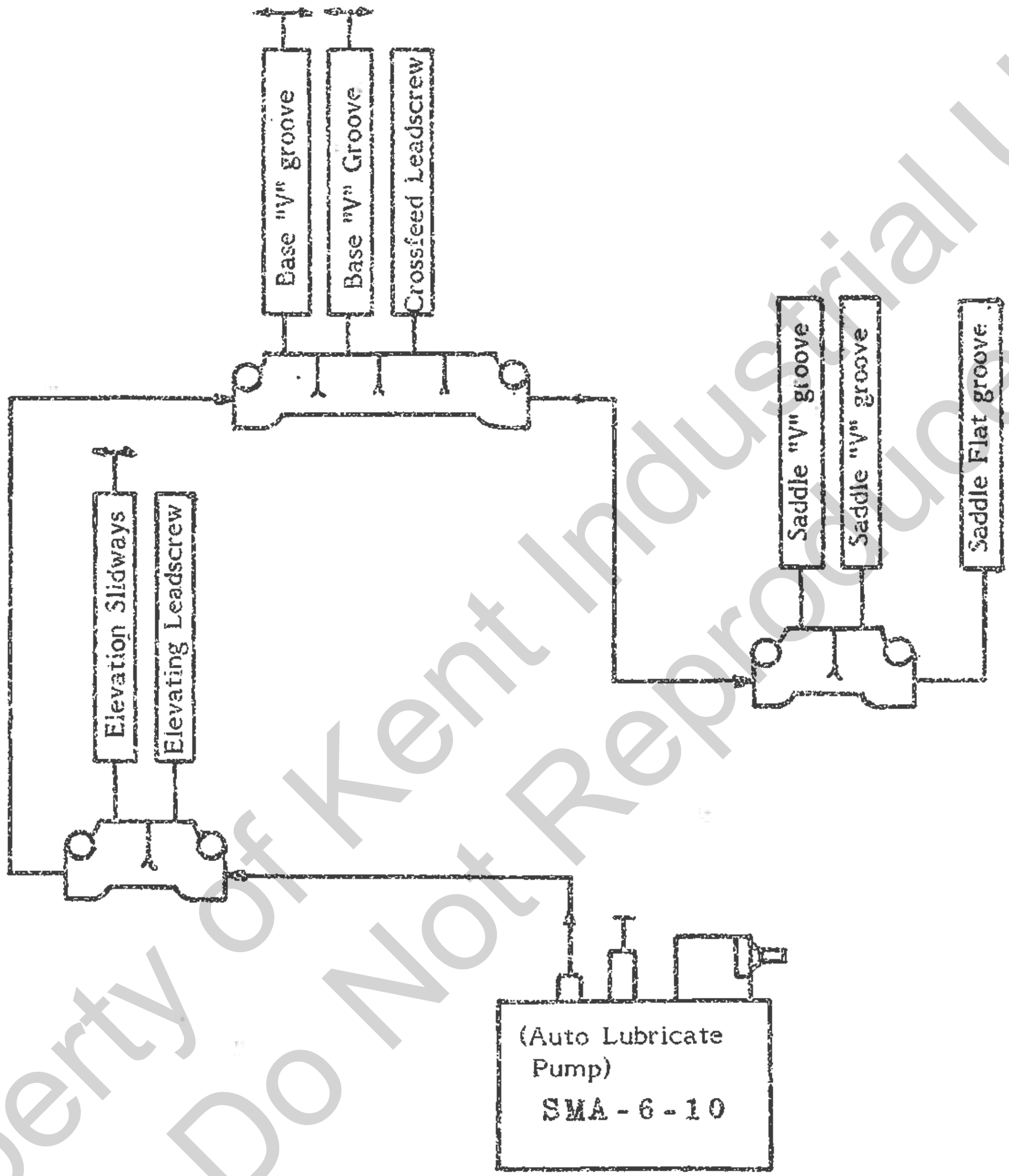
(5). Table size And Grinding Capacity.





(6). Lubrication Instruction

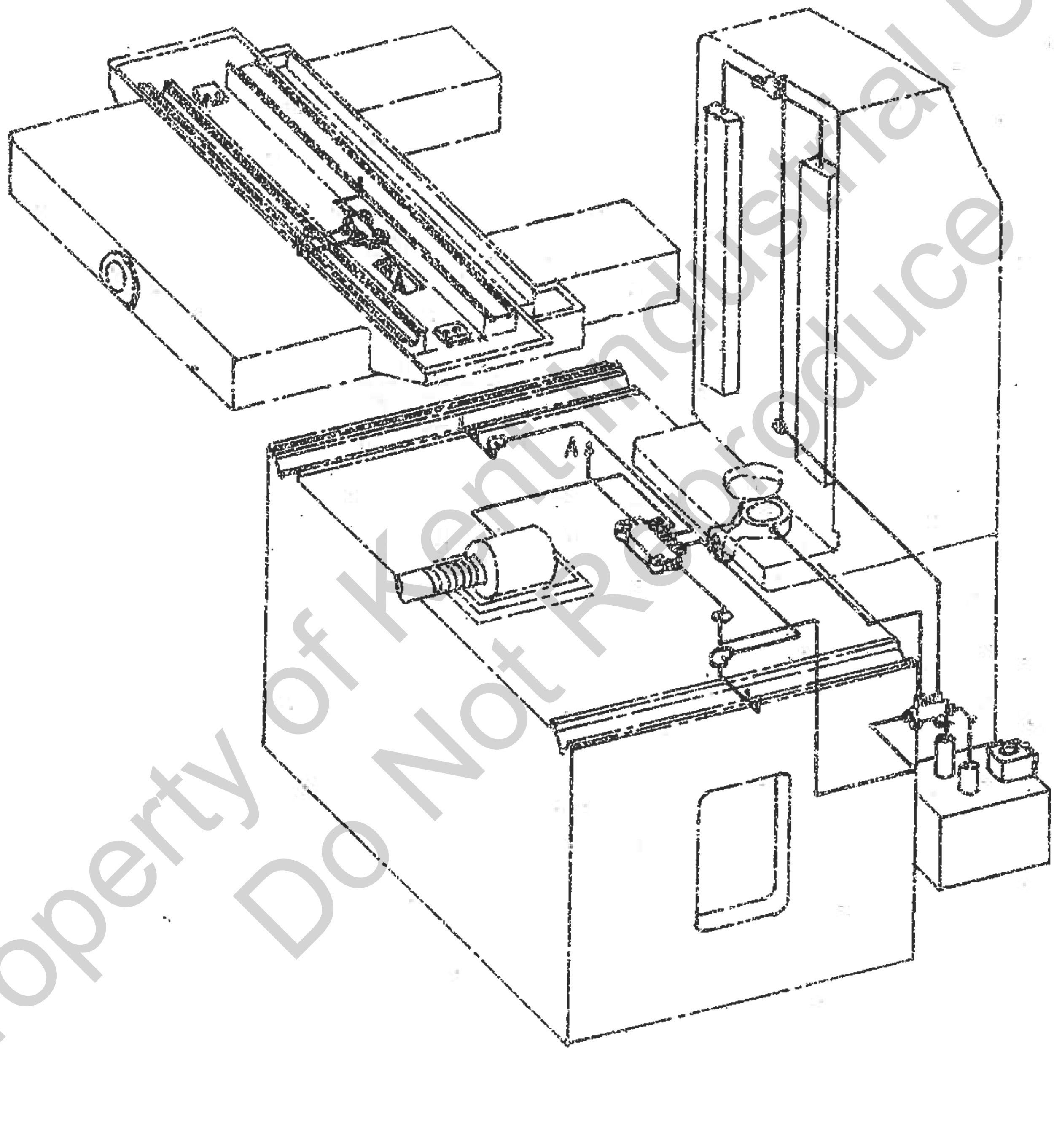
(a). Lubrication flew Chart:



Reliability of the machien and exonomic runnign ensured only by the correct choice of lubrication for the individual lubricating points.

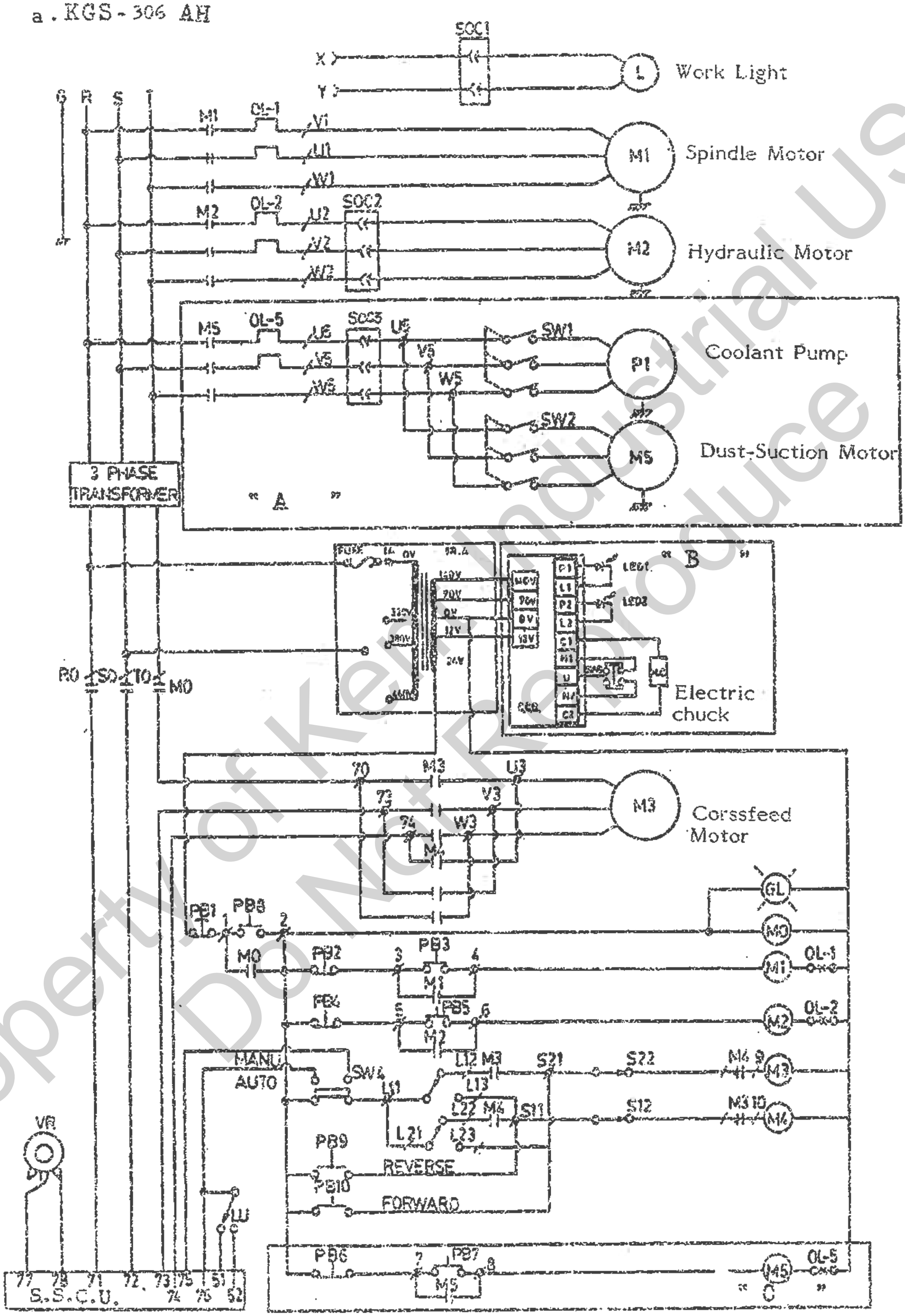
1. Lubrication pump : Auto lubrication pump will be operated when machine power is ON, then pump 3-6 cc. (adjustable) in every minutes.
2. Lubricant Tank: 1.5 liters
3. Lubricant: SAE30, or lubrication oil of BP, ESSO, MOBIL or SHELL.
4. Lubricating points: Saddle "Flat" groove   Saddle "V" groove
   Crossfeed leadscrew
   Bed "V" grooves   Elevation slidway
   * Auto. downfeed gear box (by grease gun)

b) . Lubricating System.

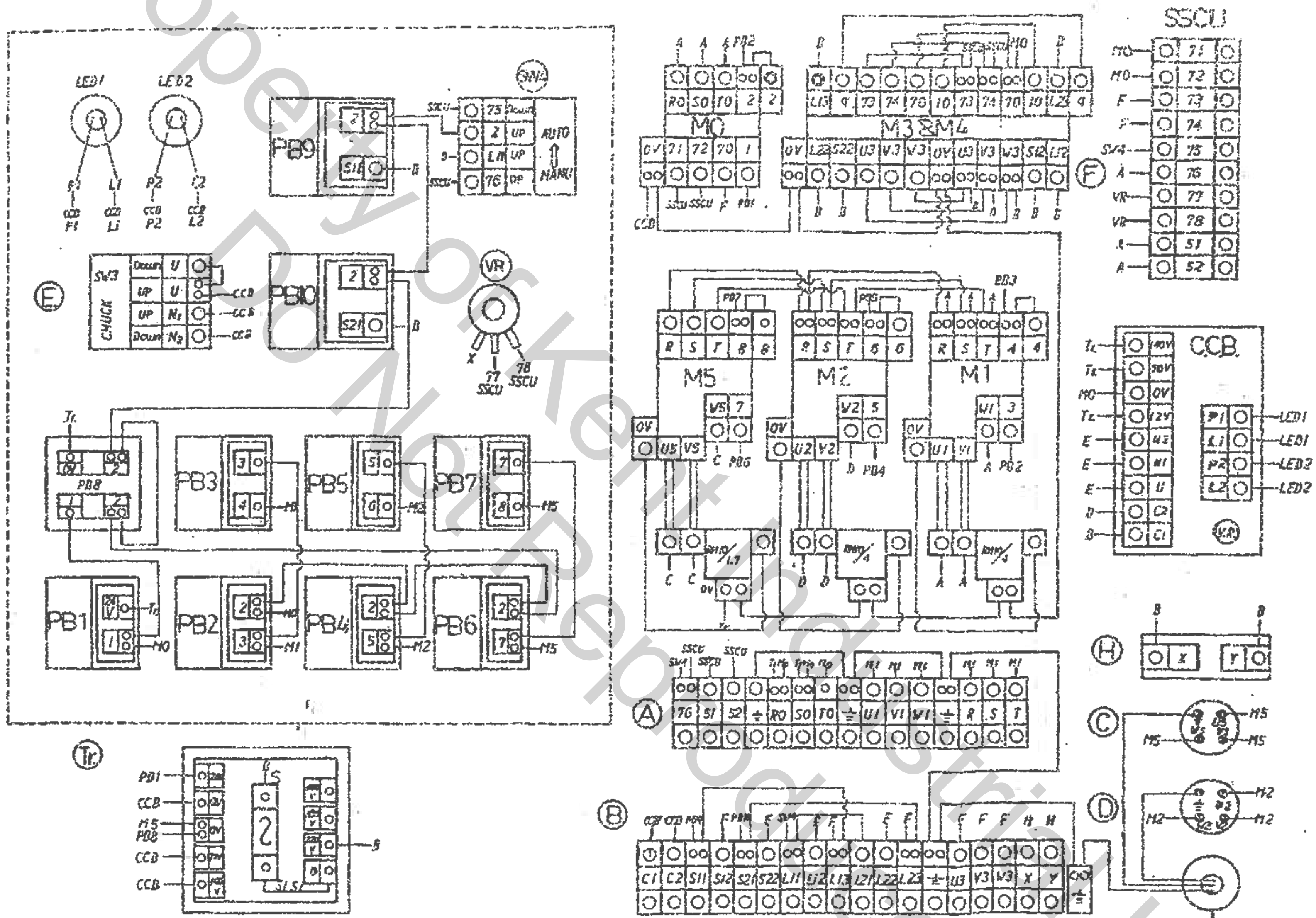


(7). Circuit Diagram & Connection Diagram,

a. KGS-306 AH



KGS-306 AH(EJ-2524)



KGS-306 AH(EG-2524)

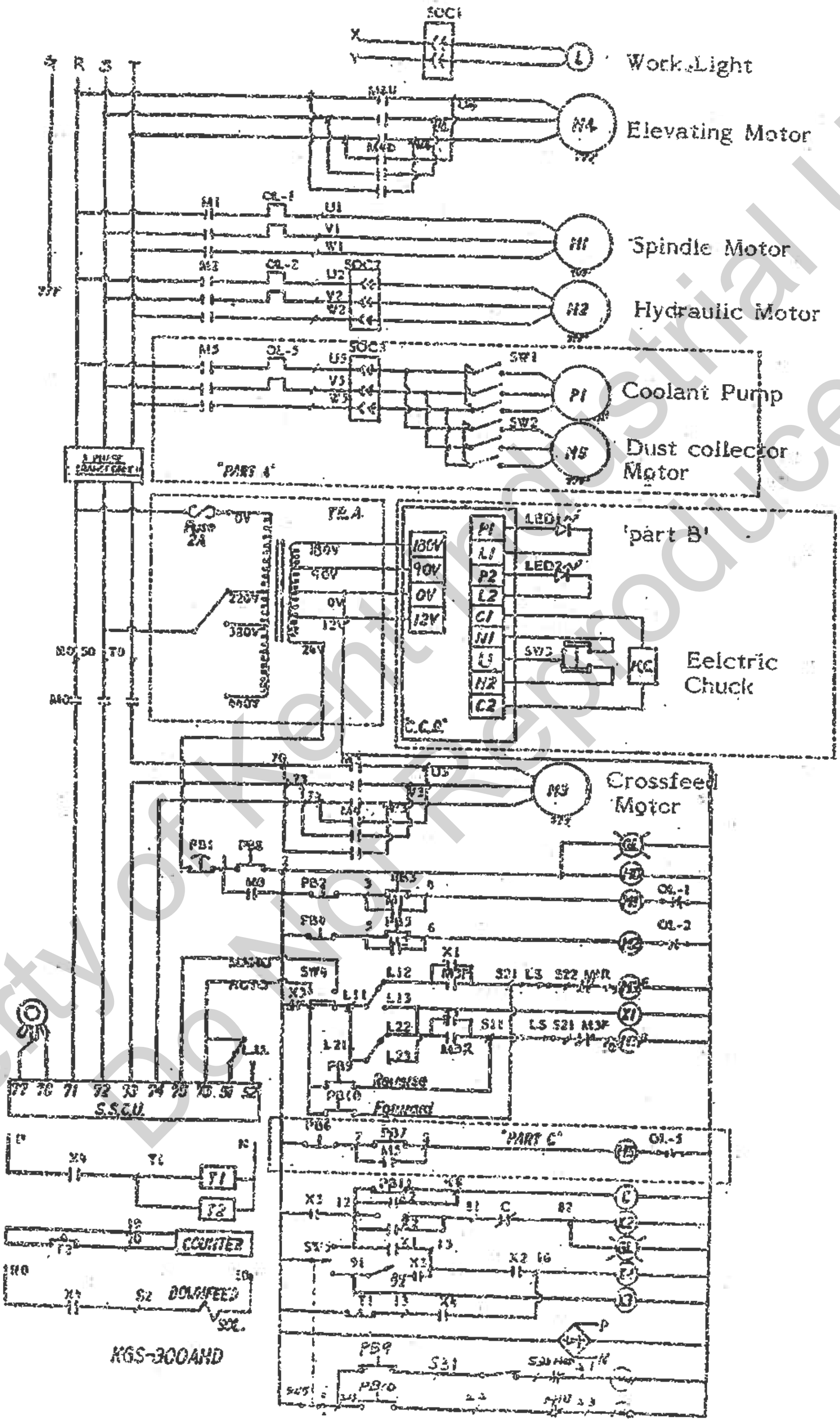
Description

PB1: Emergency pushbutton
GL&PB8: Pushbutton "ON" & indicator of power source
PB2: Pushbutton "OFF" of spindle motor
PB3: Pushbutton "ON" of spindle motor
PB4: Pushbutton "OFF" of hydraulic motor
PB5: Pushbutton "ON" of hydraulic motor
PB6: Pushbutton "OFF" of coolant or dust-collector power source
PB7: Pushbutton "ON" of coolant or dust-collector power source
PB9: Pushbutton of continuous crossfeed, approach to operator
PB10: Pushbutton of continuous crossfeed, away from operator
SW1: ON-OFF switch for coolant pump
SW2: ON-OFF switch for dust-collector motor
SW3: Selector switch of electro-magnetic chuck
SW4: Selector switch of auto/manu. crossfeed
VR: Variable resistance for crossfeed incremental control
LED1: Magnetizerism indicator
LED2: Demagnetizerism indicator
3-phase Tr.: Transformer to change local voltage to 220V
Tr. A: Transformer for electro-magnetic chuck & 24V control circuit & crossfeed motor
SOC1: Socket for illuminator
SOC2: Socket for hydraulic power source
SOC3: Socket for coolant or dust-collector
M0: Magnetic contactor for power source
M1: Magnetic contactor for spindle motor
M2: Magnetic contactor for hydraulic motor
M3 &M4 : Internal mechanical lock magnetic contactor for crossfeed motor
M5: Magnetic contactor for coolant pump or dust-collector motor
Fu: Fuse
OL1: Overload relay of M1
OL2: Overload relay of M2
OL5: Overload relay of M5
S21-S22, S11-S12: Limit switch for maximum crossfeed stroke control
L11-L12 , L21-L22 : Limit switch for adjustable crossfeed stroke control
Lu: Limit switch for crossfeed inching
S.S.C.U.: Solid state control unit
C.C.B.: Chuck control box

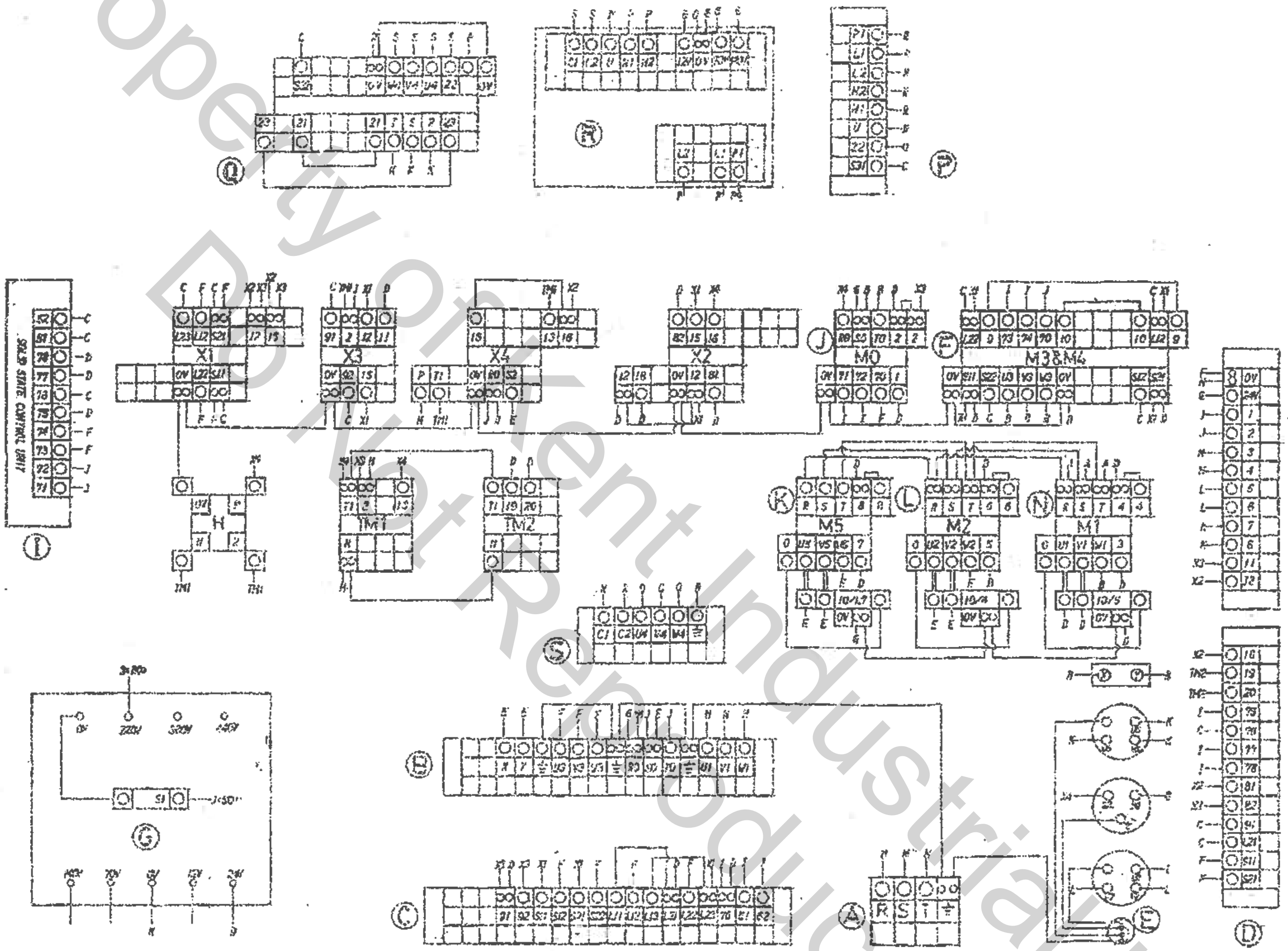
Note

Wheel spindle motor, Hydraulic motor, Wheel elevation motor, Coolant pump or Dust-collector motor must be complied with your local power voltage.

b. KGS- 306 AHD



Work Light
Elevating Motor
Spindle Motor
Hydraulic Motor
Coolant Pump
Dust collector Motor
"PART A"
'part B'
Eelctric Chuck
Crossfeed Motor
"PART C"
S.S.C.U.
COUNTER
DOWNFEED SOL.
Reverse
Forward
KGS-300AHD


SOLID STATE CONTROL UNIT
X1
X3
X4
X2
M0
M3&M4
M5
M2
M1
TM1
TM2
H
220V
380V
440V

KGS-306 AHD

Description

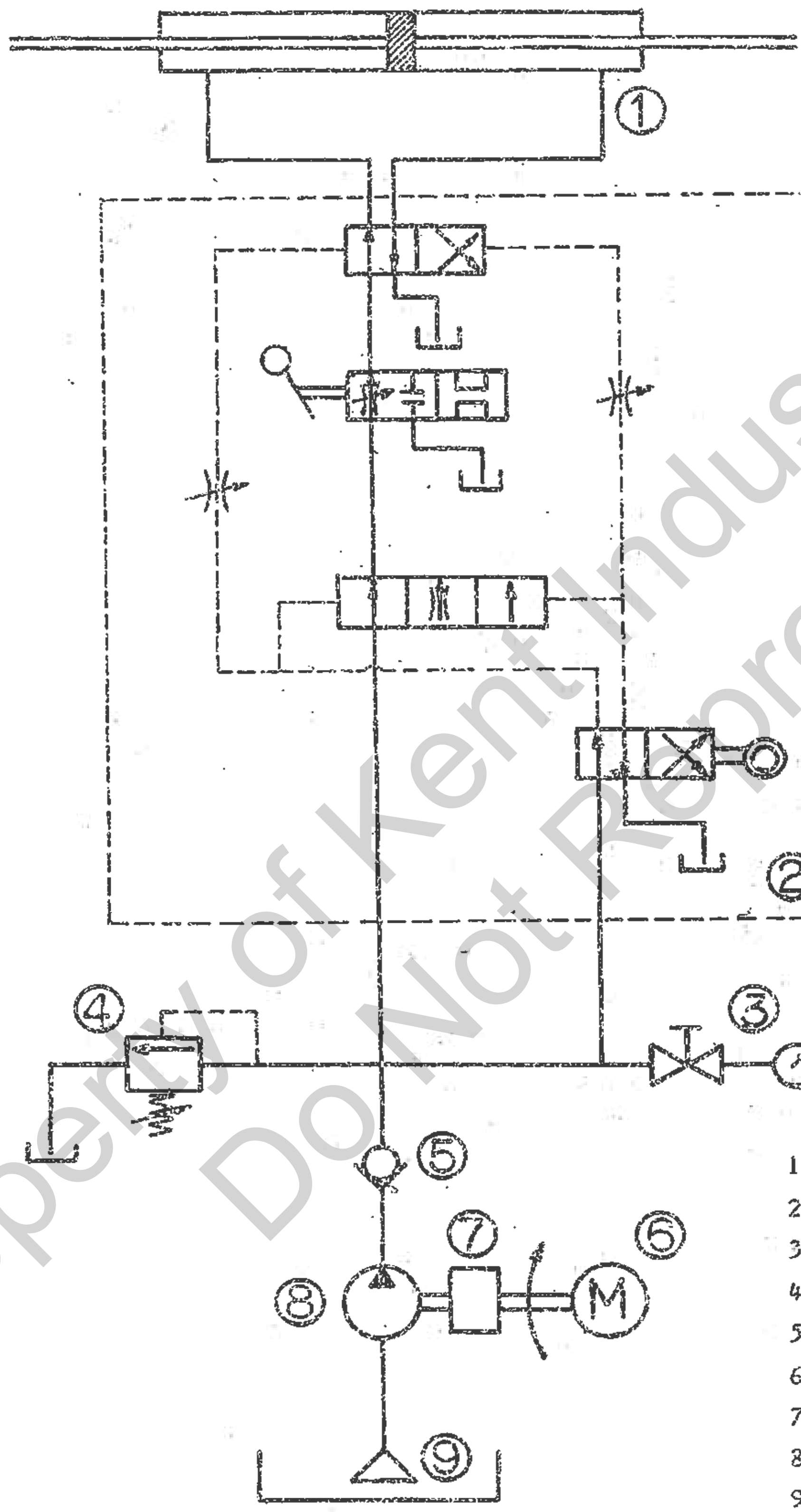
PB1: Emergency pushbutton
GL&PB8: Pushbutton "ON" & indicator of power source
PB2: Pushbutton "OFF" of spindle motor
PB3: Pushbutton "ON" of spindle motor
PB4: Pushbutton "OFF" of hydraulic motor
PB5: Pushbutton "ON" of hydraulic motor
PB6: Pushbutton "OFF" of coolant or dust-collector power source
PB7: Pushbutton "ON" of coolant or dust-collector power source
PB9: Pushbutton of continuous crossfeed, approach to operator
PB10: Pushbutton of continuous crossfeed, away from operator
PB11&GL: Pushbutton "ON" & indicator of automatic downfeed
SW1: ON-OFF switch for coolant pump
SW2: ON-OFF switch for dust-collector motor
SW3: Selector-switch of electro-magnetic chuck
SW4: Selector switch of auto/manu. crossfeed
SW5: Selector switch of surface/plunge grinding
VR: Variable resistance for crossfeed incremental control
LED1: Magnetizerism indicator
LED2: Demagnetizerism indicator
3-phase Tr.: Transformer to change local voltage to 220V
Tr.A: Transformer for electro-magnetic chuck & 24V control circuit & crossfeed motor & automatic downfeed solenoid valves
SOC1: Socket for illuminator
SOC2: Socket for hydraulic power source
SOC3: Socket for coolant pump or dust-collector motor
M0: Magnetic contactor for power source
M1: Magnetic contactor for spindle source
M2: Magnetic contactor for hydraulic motor
M3 &M4 : Internal mechanical lock magnetic contactor for crossfeed motor
M5: Magnetic contactor for coolant pump or dust-collector motor
X1: Relay for crossfeed reversal
X2: Relay for automatic downfeed clutch engage solenoid valve
X3: Relay for circuit lock of crossfeed when plunge grinding
X4: Relay for automatic downfeed solenoid valve
OL1: Overload relay of M1
OL2: Overload relay of M2
OL5: Overload relay of M5
S11-S12, S21-S22: Limit switch for maximum crossfeed stroke control
L11-L12 , L21-L22 : Limit switch for adjustable crossfeed stroke control
Lu: Limit switch for crossfeed inching
81-82: Limit switch for automatic downfeed stroke control
91-92: Limit switch for plunge grinding signal
SOL1: Solenoid valve for automatic downfeed clutch engage
SOL2: Solenoid valve for automatic downfeed
S.S.C.U.: Solid state control unit
C.C.B.: Chuck control box
D.T.U.: Delay timer unit

** Note**

Wheel spindle motor, Hydraulic motor, Wheel elevation motor, Coolant pump or Dust-collector motor must be complied with your local power voltage.

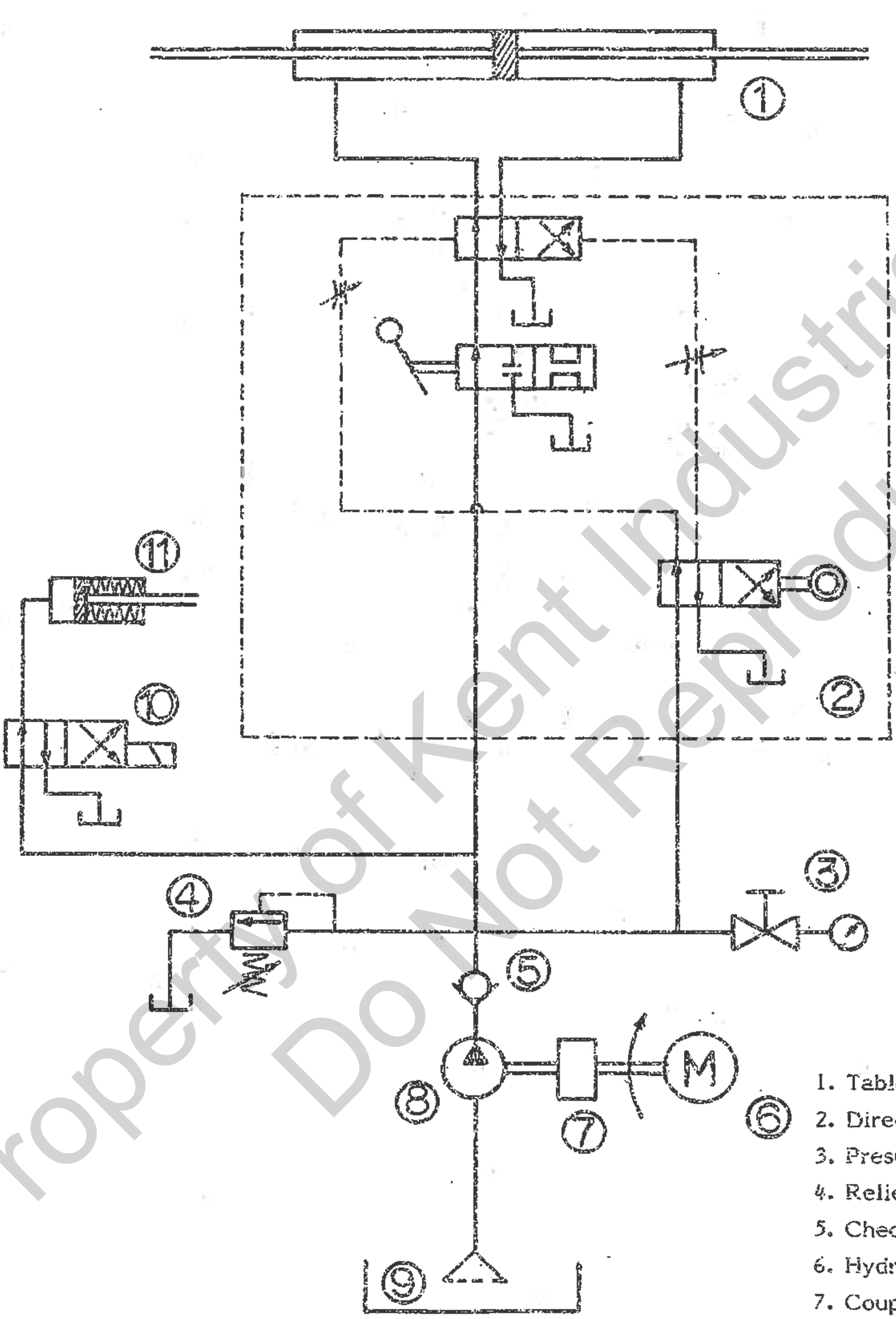
*(8). Hydraulic System

a). KGS-306AH Hydraulic diagram.



1. Table drive cylinder
2. Direction Control valve
3. Preasure gauge
4. Relief Valve
5. Check valve
6. Hydraulic motor
7. Coupling
8. Hydraulic pump
9. Hydraulic Tank

b. KGS-306 AHD



1. Table drive cylinder
2. Direction control valve
3. Presure gauge
4. Relief Valve
5. Check valve
6. Hydraulic motor
7. Coupling
8. Hydraulic pump
9. Hydraulic Tank
10. Solenoid valve
11. Downfeed cylinder

c). Hydraulic oil

Hydraulic tank volumn: 86ℓ (21.5gals)

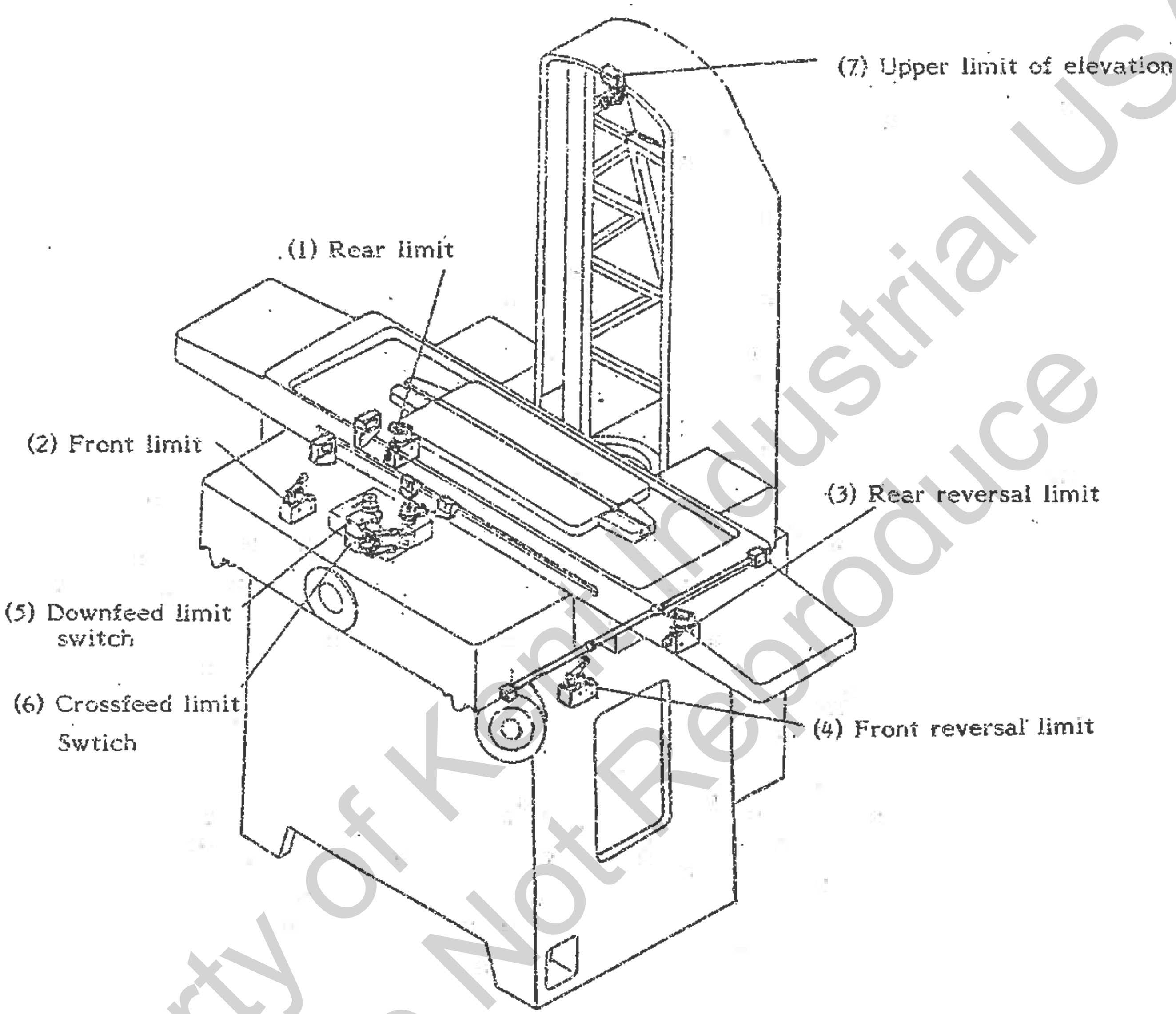
Re-fill frequency: After first one month change new hydraulic oil and clean hydraulic tank. then every six months.

Hydraulic oil:

CPC	BP	ESSO	MOBIL	SHELL
R-68	ENGRGOL	ESSTIC 50	D.T.E. oil	SHELL
	HL100		Medium	Tellus Oil 29
	4.5°E/50°C	4.7°E/50°C	3.93°E/50°C	4.0°E/50°C
	33cst/50°C	35cst/50°C	28.9cst/50°C	29cst/50°C

* Fill up the hydraulic oil before starting.
* Table driven by hydraulic force, please ensure that there is no people or matter within the range of table movement before starting the longitudinal travel.
* Maximum hydraulic pressure: $25kgs/cm^2$
* Clean filter or change a new one if damaged when changing new oil.

(9). Limit Switch Position



Descriptions:

(1) Rear Limit : S11-S12

(2) Front Limit: S21-S22

(3) Rear reversal limit : L11-L12

(4) Front refersal limit: L21-L22

(5) Downfeed limit switch: 91-92 (for AHD model only)

(6) Crossfeed limit switch: 76-51-52

(7) Upper limit of elevation: S31-S32 (for AHD model only)

* For above mentioned cord number, please refer to Circuit Diagram.

(10). Balancing the grinding wheel

Efficient balancing is essential to eliminate unnecessary and additional stress in the wheel. It is also unavoidable to obtain high quality results. Grinding accuracy and surface finish as well as life of grinding wheel, wheel spindle and bearings depend to some considerable extent on careful balancing. Static balancing will frequently sufficed for this purpose.

The grinding wheel together with the wheel flange is fitted to balancing arbor and this assembly is then placed on two accurate parallel knife edges of the wheel balancing base, and balancing can be effected as follows: (see Fig. 2)

* The wheel balancing base must be levelled (Fig. 1)
* Allow the wheel to oscillate to find the center of gravity which is then marked "S" with chalk (Fig. 3)
* Apply the first balancing weight "G" opposite to this point "S" and screw it up. It can not be moved again (Fig. 4)
* Place two correction weight "K" anywhere around the periphery, but at equal distance "a" from weight "G" (Fig. 5)
* Turn the wheel through 90° at a time and see if it is balance. If not, the correction weight "K" must be moved until the wheel is in balance in any position (Fig. 6)
* After balancing, the wheel must be given a test run of at least five minutes at full working speed before being used or starting re-balance.

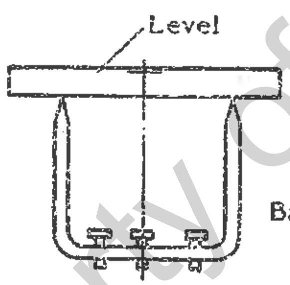


Fig. 1

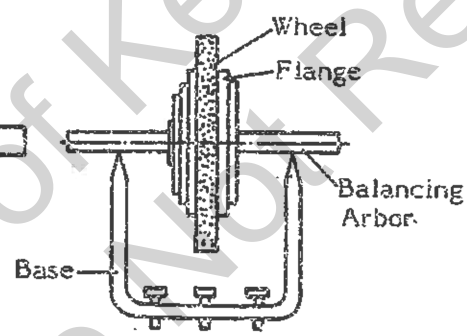


Fig. 2

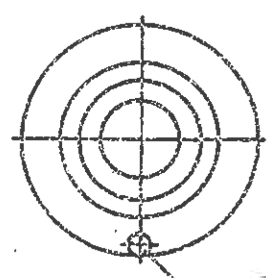


Fig. 3

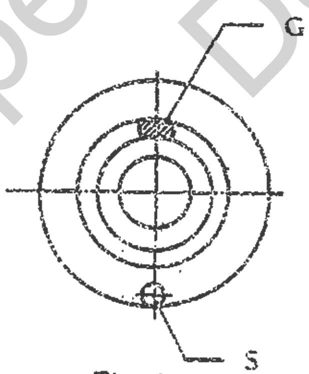


Fig. 4

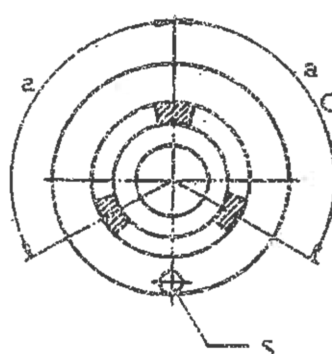


Fig. 5

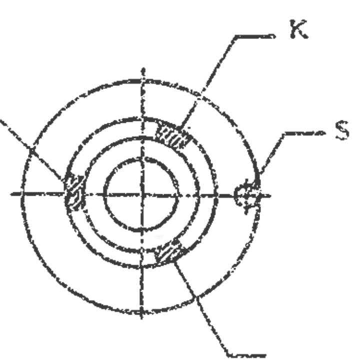


Fig. 6

After being balanced for the first time, the wheel must be mounted on the grinding spindle of the machine and dressed. This can be done with the parallel dresser on the spindle carrier or with one fitted on the table. When dressing the wheel from the table, the table must be locked longitudinally and then cross-traversed with handwheel. The wheel must be dressed until it runs dead true. The grinding finish is improved, if any out-of-truth in the side walls of the wheel is also removed.

After this first balancing, the wheel must be removed from the spindle again and then carefully re-balanced. After being fitted to the spindle again and re-dressed, it is ready for use.

* The wheel attached with the machine are accurately balanced together with their mountings. As wear can lead to unbalance, the wheel should be re-checked and, if necessary, re-balanced.

Grinding wheel absorbs humidity and coolant, it is therefore advisable not to start coolant supply when the wheel is stationary, otherwise the wheel will absorb liquid on one side only and will then be out of balance. If the wheel is allowed to stand for any length of time coolant will collect at the lowest point. Unbalance will also be generated if the wheel is not allowed to idle after operation. Idling is essential to throw-off coolant by centrifugal force.

Prior to place the flange-mounted grinding wheel to the spindle, flange bore and spindle taper must be absolutely clean, and the wheel is pushed by hand onto the spindle taper.

Subsequently, tighten wheel flange securely with fixed bolt. (Fig. 7). To release wheel flange from spindle taper with extractor. (Fig. 8).

Fig. 7

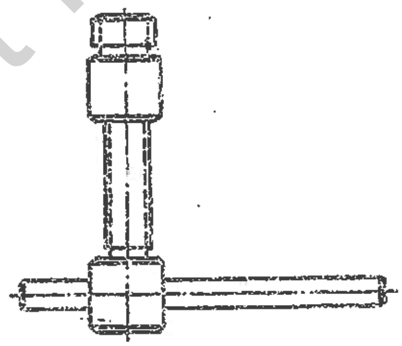


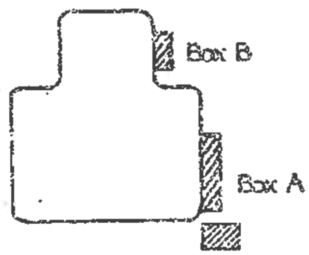
Fig. 8

* If various materials have to be ground, so that the wheel has to be changed frequently, it is more advantageous to change the wheel complete with flange. It would involve unnecessary loss of time and wheel waste to remove the wheel from its mounting every time and re-balance and re-dress it.

E). Putting The Machine Into Operation

(1). Wiring of power source

Be sure that the wire connection is same as your power source before power "ON" the machine.



Box A: Electric cabinet

Box B: Three-phase transformer for:

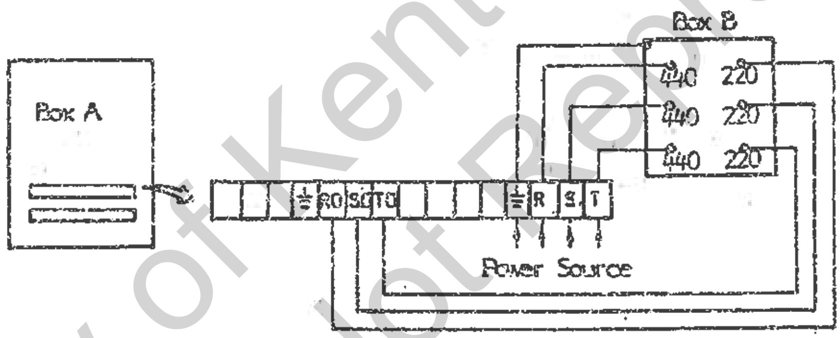
1. Crossfeed motor
2. Solenoid valve (AHD model)
3. Electro-magnetic chuck (Optional)
4. Auto. lubrication pump (KGS-818AHD, 1020AHD)

Box C: Control panel and control circuit (AHD model)

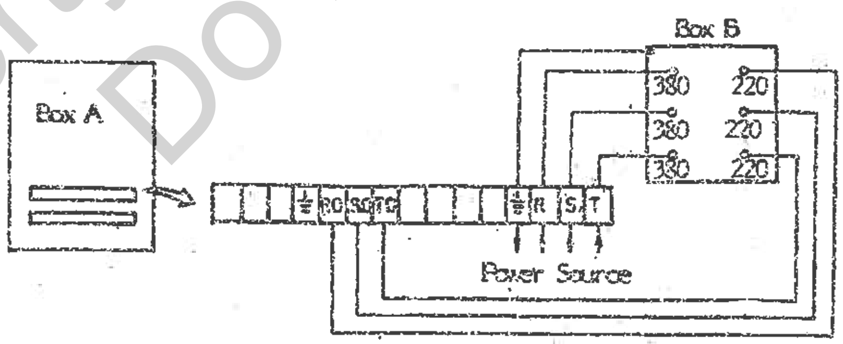
Attention: Following motors must be wired in accordance with power source voltage.

1. Spindle motor
2. Hydraulic motor (For H, AH, AHD models)
3. Coolant or dust-collector motor (Optional accessory)

a. For 440V power source areas:

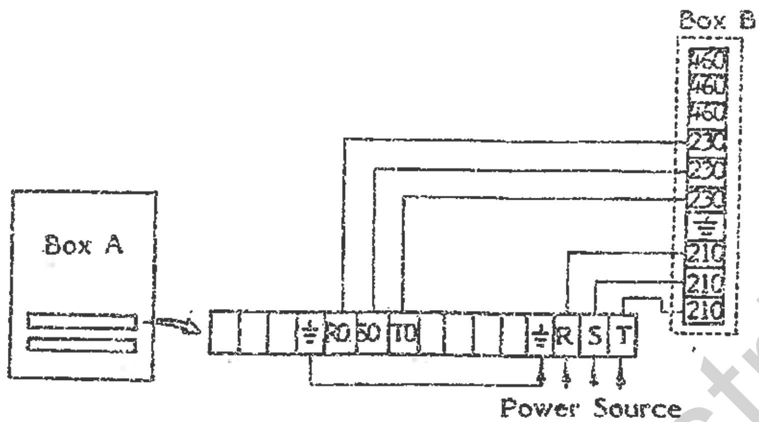


b. For 380V power source areas:

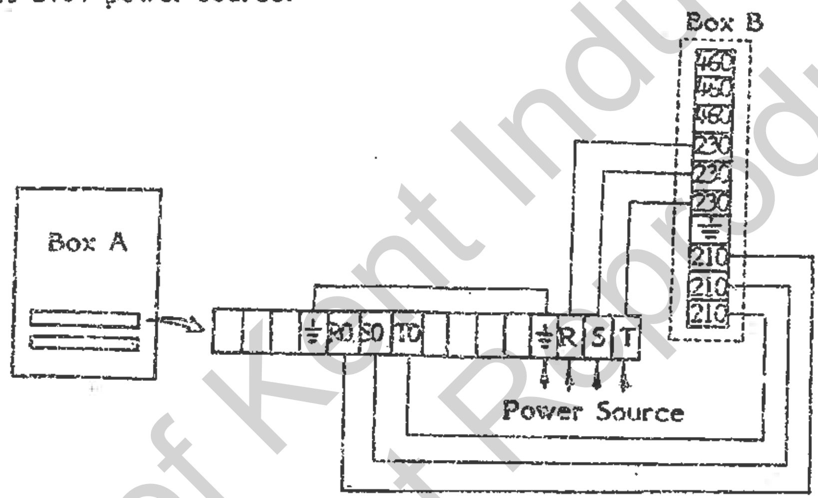


c. For U.S.A. area:

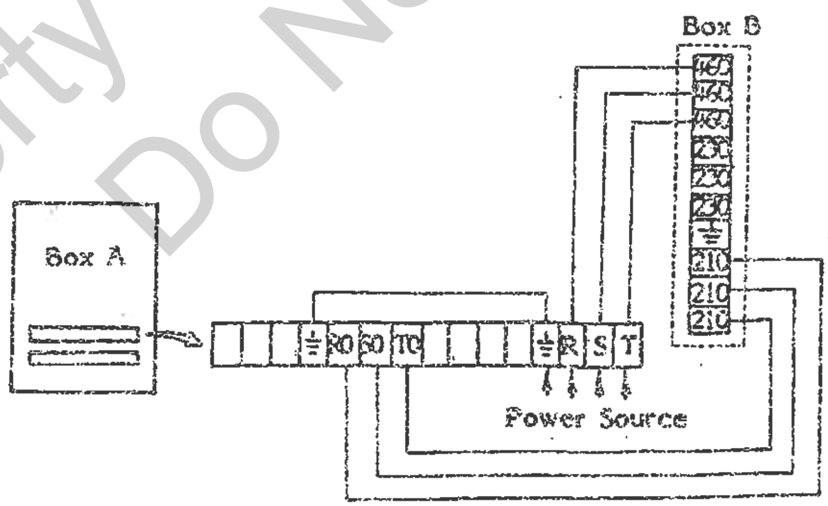
200V to 220V power source:



220V to 240V power source:



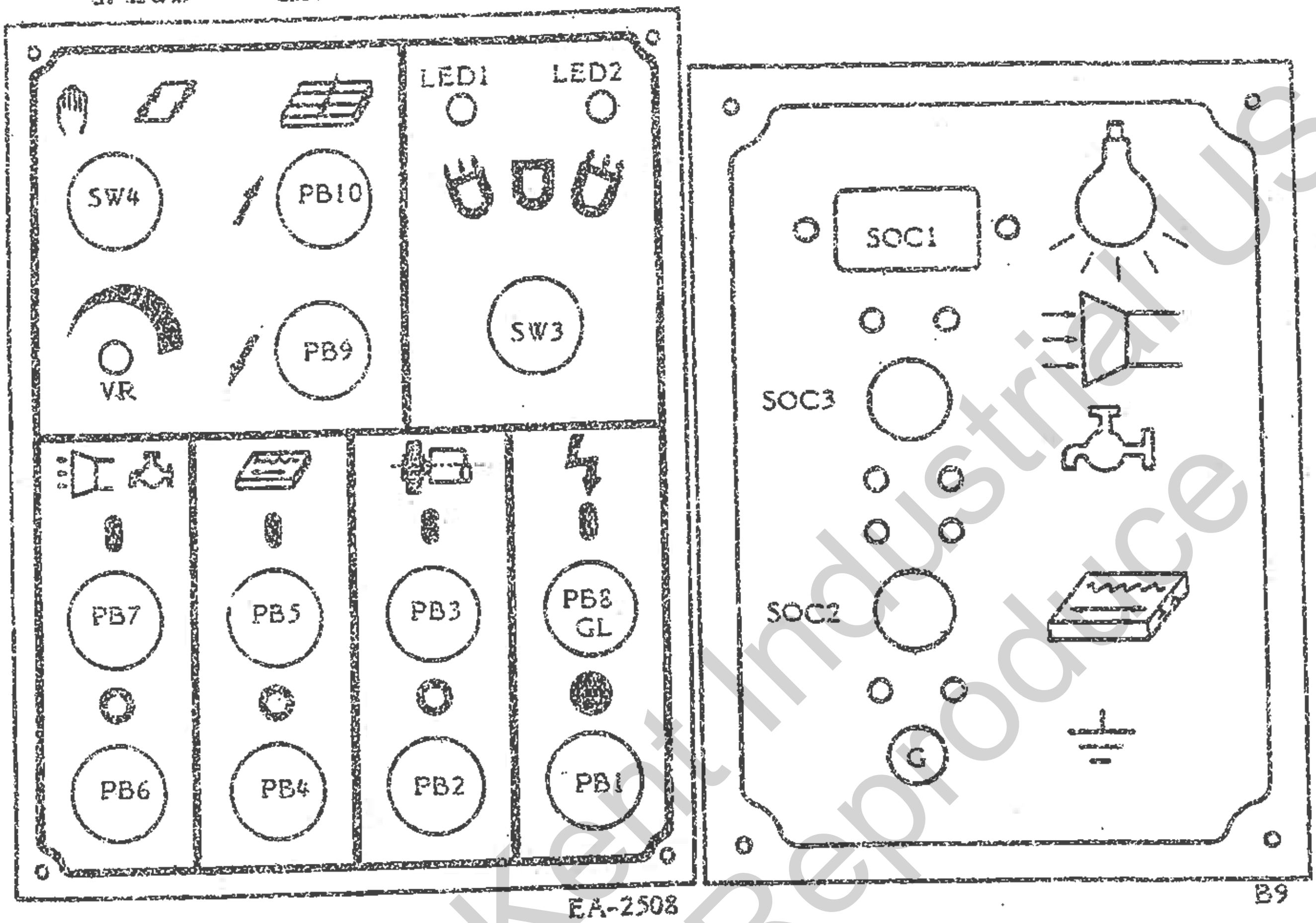
440V to 460V power source:



E. Putting the Machine into Operation.

(2). Control panel * description.

a. KGS- 306 AII



PB1 : Emergency stop pushbutton

GL & PB8: Pushbutton "ON" & INDICATOR OF POWER SOURCE

PB2 : Pushbutton "OFF" of grinding wheel motor

PB3 : Pushbutton "ON" of grinding wheel motor

PB4 : Pushbutton "OFF" of hydraulic motor

PB5 : Pushbutton "ON" of hydraulic motor

PB6 : Pushbutton "OFF" of coolant pump

PB7 : Pushbutton "ON" of coolant pump

PB9 : Pushbutton for saddle continuous travel, forward

PB10 : Pushbutton for saddle continuous travel, backward

SW3 : Selector switch for electric magnetic chuck, mag./demag.

SW4 : Selector switch for saddle auto./manu. functions

VR : Variable resistance for crossfeed incremental control

LED1 : Indicator of electric magnetic chuck, demag.

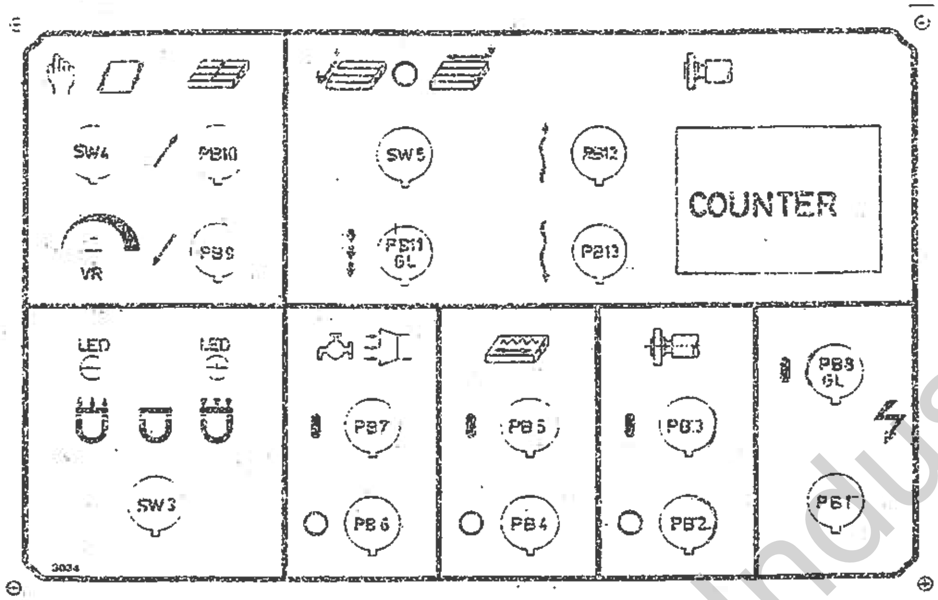
LED2 : Indicator of electric magnetic chuck, mag.

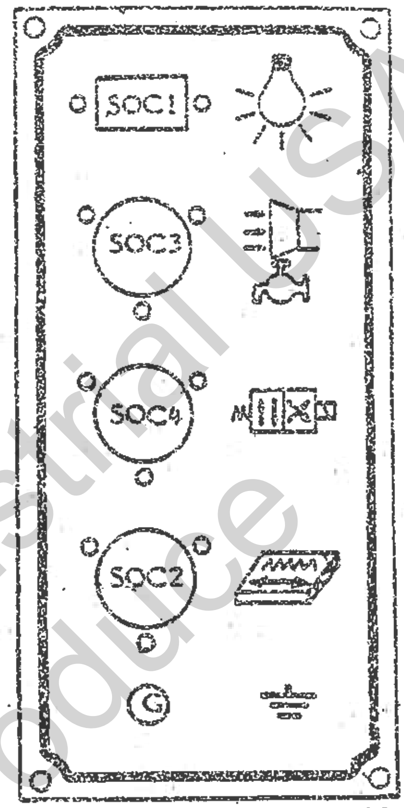
SOC1 : Socket for working light

SOC2 : Socket for Hydraulic motor

SOC3 : Socket for Dust-Suction & Coolant motor

b. KGS - 306 AHD





W30

PB1: : Emergency stop pushbutton
GL & PB8 : Pushbutton "ON" & indicator of power source
PB2 : Pushbutton "OFF" of grinding wheel motor
PB3 : Pushbutton "ON" of grinding wheel motor
PB4 : Pushbutton "OFF" of hydraulic motor
PB5 : Pushbutton "ON" of hydraulic motor
PB6 : Pushbutton "OFF" of coolant motor
PB7 : Pushbutton "ON" of coolant motor
PB9 : Pushbutton for saddle continuous travel , forward
PB10 : Pushbutton for saddle continuous travel, backward
PB11 & GL : Pushbutton "ON" * indicator of auto. downfeed system
PB12 : Pushbutton FOR GRINDING WHEEL ELEVATION, UPWARD
PB13 : Pushbutton for grinding wheel elevation,.. downfard
SW3 : Seelctor switch for electric magneitc chuck, mag./demag.
SW4 : Seldctor switch for saddle auto./manu. functions
SW5 : Selector switch for surface grinding/plunge grinding
VR : Variable resistance for crossfeed incremental control
LED1 : Indicator of electric magnetic chuck, demag.
LED2 : Indicator of eelctric magneitc chuck, amg.
SOC1 : Socket for working light
SOC2 : Socket for hydraulic motor
SOC3 : Socket for Dust-Suction * Coolant motor
SOC4 : Socket for auto. downfeed solenoid.

(3). Operation

a). Before operation

It's only after the following instructions have been fully complied with that the machine can be started:

1. Choice of a location free from vibration.
2. Clean up the machine of those anti-dust oil and grease.
3. Installation and levelling of the machine.
4. Lubrication of the machine according to lubrication instruction.
5. Checking the spindle (wheel) rotation direction, it must be in clockwise. Please take off the wheel prior to start spindle or it will cause danger if it rotates in counter-clockwise.
6. Fill up the hydraulic tank with suitable oil.
7. Flow control lever for hydraulic table traverse must be in close position.
8. Adjust suitable stroke of the table. The longitudinal stroke is limited by two pieces of stopper dog on the front side of table. The distance can be adjusted by loosening the screws, sliding the stopper dogs and fastening again.
9. And mention again: Please re-check your power source is same as that of the voltage pre-wired when shipping.

b). Operation

1. Power ON & OFF
   a. Press PB8, GL indicator lights, electric control box is ready.
   b. Press PB1 to stop power. Re-set PB1 and re-press PB8 for power ON again.
2. Wheel spindle
   Press PB2, the wheel spindle motor starts; press PB3 to stop.
3. Power elevation
   a. Press PB12, the wheel elevation upward, release to stop. Press PB13, the wheel elevation downward, release to stop.
   b. When the grinding wheel is going to touch workpiece, change to control downfeed by handwheel.
4. Table longitudinal travel
   a. Press PB4 to start hydraulic motor.
   b. Turn the flow control lever clockwise until the table starts slowly, when it turns to 90° it gets maximum table speed.
   c. If the table starts jerkily, may be there is air in the hydraulic hose. The air will escape easily if the table be operated at high speed and long stroke.
   d. Press PB5 to stop hydraulic motor, now the table can be operated by handwheel.

5. Cross travel

a. Turn SW4 to left (position), press PB9 makes saddle traverse backward continuously; press PB10 makes saddle traverse forward continuously. For AHD model, this function only effective when SW5 is in left position (surface grinding), it's the safety device to interlock saddle traverse when SW5 in right position for plunge grinding.

b. Turn SW4 to right (position), press PB9 or PB10 and release, adjust VR, the saddle now feeds automatically which effected with each reversal of the table when surface grinding. By acturating SW4 to left, this function can be interrupted at once. The crossfeed distance can be limited by setting the two stopper dogs' distance to touch the two limit switches located on the right side of the machine base, which effects the reversal of the saddle.

c. There are two limit switches, in addition, on the left side of machine base for limitting the maximum cross travel of the saddle. They are also used as safety device in case of accident when any failure of the crossfeed mechanism.

6. Automatic downfeed control (For AHD model)

a. Turn selector switch SW5 on (plunge grinding) position, press pushbutton PB11 then grinding wheel will auto. downfeed when table longitudinal traverse at left end; turn selector switch SW5 on (surface grinding) position, press PB11, then grinding wheel will auto. downfeed at both ends of crossfeed travel; turn selector switch SW5 on neuture position, grinding wheel stop auto. downfeed.

b. Downfeed increment can be pre-set by preset dial at 0.005, 0.01, 0.015, 0.02, 0.025, 0.03, 0.035, 0.04, 0.045, 0.05mm, 10 steps (metric type); or 0.0002, 0.0004, 0.0006, 0.0008, 0.001, 0.0012, 0.0014, 0.0016, 0.0018, 0.002inch, 10 steps (inch type). Figure shown under is downfeed increment be set at 0.025mm.

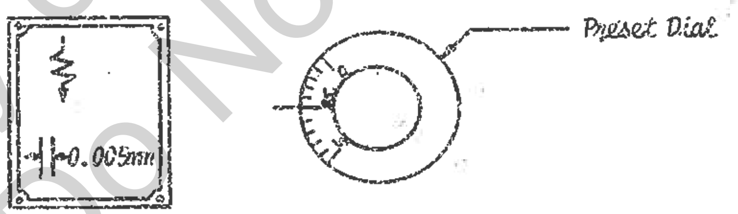
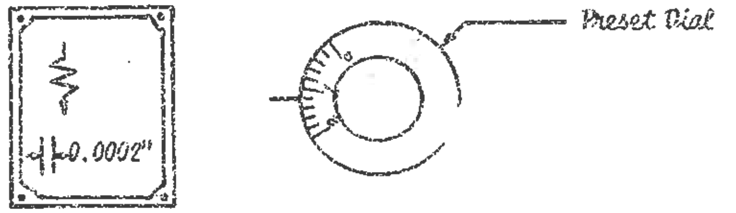


Figure shown under is downfeed increment be set at 0.0012"

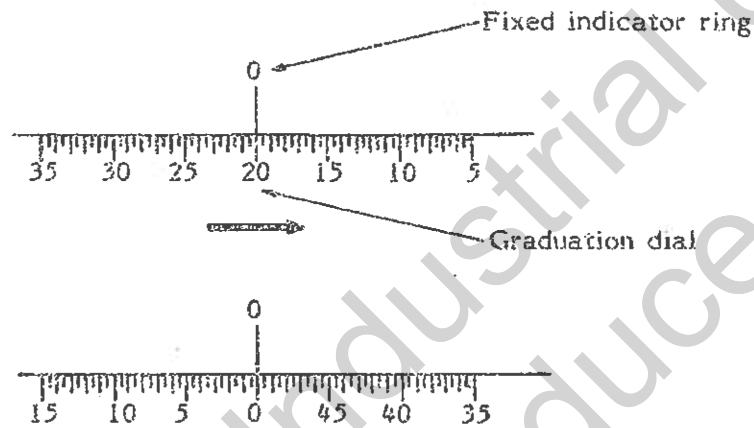


c. For instance, total work piece downfeed removal is 0.3mm, and automatic downfeed increment be set at 0.02mm:

Loosen the set screw on graduation dial and turn the dial to let the scale "20" aim at the mark "0" on the fixed indicator ring. (1 revolution of downfeed handwheel is 0.5mm minus total removal 0.3mm leaves 0.2mm) After automatic downfeed 15 times at each time 0.02mm (0.02mm x 15 = 0.3mm), the mark "0" of graduation dial will meet "0" of fixed indicator ring and automatic downfeed stop.

Before Work:

After Work:



d. Stop the table longitudinal traverse by press pushbutton PB4; stop grinding wheel by press pushbutton PB2 when work is done.

Caution: Don't push the auto downfeed button while the table is traveling close to the right end. (or the left stop dog is approaching the direction control arm.) The Cylinder might be hit at its left end, especially when the longitudinal traverse is at its maximun distance.

The best time to push the auto downfeed button:

When the direction control arm is near the middle range of the two dogs.

7. Coolant system (optional accessory)
   a. Press PB6 to start coolant pump.
   b. Adjust cock valve to get suitable coolant flow.
8. Dust-suction coolant system (optional accessory)
   a. Press PB6 to start suction motor or coolant pump.
   b. Adjust cock valve to get suitable coolant flow (when wet grinding).
   c. Press PB7 to stop.

** Caution: There are two sets of ON-OFF switches on Dust-suction coolant system: one is for dust-collector (dry grinding) and the other one is for coolant pump (wet grinding), it depends on your work situation. These two switches can not be used simultaneously.

9. Electro-magnetic Chuck
   a. Turn SW3 to right position for chuck magnetism, LED2 indicator light.
   b. Turn SW3 to left position for chuck demagnetism, LED1 indicator light, then LED2→LED1→LED2→LED1 total 5 times. After vanished, the chuck is in full demagnetism condition.

F. General Comments Of Grinding

The grinding results obtained depend to a very degree on the choice of the correct grinding wheel and suitable operation.

(1) Stock removal efficiency

For intensive stock removal a coarse grain (about 30-36) should be used. The wheel is dressed by passing the diamond over quickly so that the surface of the wheel is roughened and bites well.

(2) Surface finish required

If fine finish is to be produced, a finer grain wheel is required (40-80). The diamond in this case is passed slowlyover the wheel so as to break up the grain.

(3) Distortion of the workpiece

If the workpiece shows too much distorrion when being ground, this means that the stock removal was too great and the longitudinal and cross movements of the table was too slow, or the grinding wheel in " clogged ".

(4) Undersirable burns and grinding cracks

If burn marks and grinding cracks appear, this means that the wheel is too hard, or the wheel " clogged "

G. Wheel Inspection

It is absolutely essential to comply fully with following safety rules. These are intended to protect the operator against danger.

Wheel inspection and fitting:

Prior to fitting any grinding wheel, it should always be tested. Sounding the wheel is a generally accepted test method.

The wheel should be suspended from a mandrel secured to its bore and should then be lightly sounded with a wooden hammer. Even wheels with hair cracks not visible with the bare eye will produce a distorted note in comparison with perfect wheel where the sound is clear. Defective grinding wheel must not be used.

There are two pieces of paper washer on both faces of wheel and serve as plastic packings between wheel and mounting flange. The packing washer must not be removed, when mounting the wheel should slide onto the flange easily by hand without the need for force. Wheel flange must be absolutely clean especially on the clamping and location surface, in the spindle bore and thread. The flange fixing screws should be tightened gradually and diagonally. The wrench should be applied at least 4 to 6 times to each screw in turn. When the wheel has run under coolant for sometime the paper packing washers will be damped, so it must re-tighten the fixing screws again diagonally.

H. Dressing The Wheel And Correct Treatment Of Dressing Diamond

The diamond is inserts in the dressing device. The sleeve of the dressing device is arranged at an angle fo about 5°, so that , when the diamond loses its keenness, it can be turned in the sleeve, along with its holder, thus ensuring that there is always a sharp diamond edge available.

Various degrees of roughness can be produced in the ground component by varying the speed at which the diamond is passed over the grinding wheel.

If there is only about 0.2mm to 0.3mm stock removal, it is advisable to roughen the grinding wheel. This is done by feeding the diamond in about 0.03mm and turning the handwheel rapidly, so that the dressing diamond moves quickly over the wheel. This makes the wheel bite well and the stock removal is good.

If the component is to be finish ground to size with the same grinding wheel, the wheel must be dressed again, this time slowly, in two or three passes, with the diamond fed in only about 0.01mm.

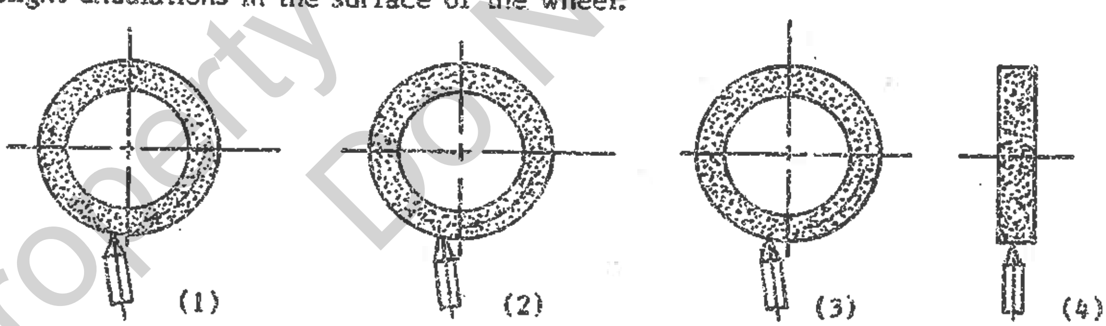
Frequent light dressing is better for the life of the grinding wheel and the diamond than a heavy cut.

When dressing, the diamond should always be cooled, if possible, but sudden cooling is dangerous, as it can lead to the diamond being split.

As the diamond is very brittle because of its extraordinary hardness and being sensitive to even the slightest knock, naturally cracks easily.

When dressing, begin in the center, as the edges are uaually worn down further. If dressing is begun at the worn edges, there is danger of the higher pressure in the center overstressing the daimond and shattering it.

Experience has shown that, with highly accurate grinding, dressing with the hand-operated dressing device on the spindle carrier is inadequate. The hand operation necessarily causes slight undulations in the surface of the wheel.



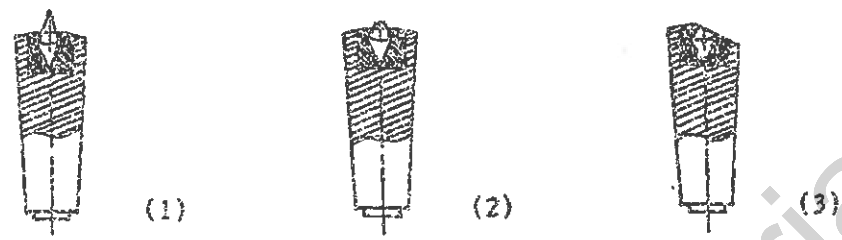
(1) The new diamond is inclined at the correct angle to the wheel.

(2) As a face has formed on the diamond, it must be turned about its axis.

(3) The new point acts like a new diamond again.

(4) Begin in the middle of the width.

After a certain time, the diamond must be changed in its holder, i.e. it must be reset to ensure economical operation. This re-setting should be undertaken in time, before any of the holder itself has been ground off. Otherwise, there is first of all the danger of breaking the diamond out and losing it, or secondly, of its being too small to be reset.
This is really false economy.



(1) The new diamond.
(2) The diamond now be reset.
(3) Too late. The diamond can no longer be reset, as it has no more holder. Resetting should be done by specialists only.

I. Storage Of Grinding Wheels

The wheels should be kept in special racks in a dry place and must be protected from knocks and jolts, especially when they are being transported.
As a rule, they should be stood on edge, but thin wheels and wheels with a sharp edge must be laid flat on an even surface.
Grinding wheels must not be allowed to come into contact with oil or grease. An oilsoaked wheel loses its bite and its application is very limited.

J. Selection Of Suitable Grinding Wheels

Grinding wheel markings: For instance WA 46K8V
WA: Kind of abrasive
46: Grain size
K: Grade
8: Structure
V: Bond type
A. Kinds of abrasive
  A: For common steel grinding
  WA: For higher hardness material grinding, such as heat-treated steel, alloy steel, etc.
  H: Suitable for higher hardness material, particularly high speed steel
  C: For cast iron and non-ferrous grinding
  GC: For super hard grinding such as tungsten carbide steel
B. Grain size
  Coarse: 10,12,14,16,20,24
  Medium: 30,36,46,54,60
  Fine: 70,80,90,100,120,150,180

Grinding condition \ Grain	Coarse	Fine
Stock removal	much	little
Surface roughness	coarse	fine
works hardness	soft	hard
Surface contacted	wide	narrow
Dia. of the wheel	big	small

C. Grade: It indicate the strength of the bond which hold abrasive

Soft: A to H

Medium: I to P

Hard: Q to Z

Grinding condition \ Grade	Soft	Hard
Works hardness	hard	soft
Surface be contacted	wide	narrow
Movement of work	slow	quick
Wheel speed	quick	slow

D. Structure: The structure number of a wheel refers to the relative spacing of the grains of abrasive; the larger number, the wider the grain spacing.

Close: 0,1,2,3,4,5,

Medium: 6,7,8,9,

Wide: 10,11,12,

Grinding condition \ Sturcture	Wide	Close
Surface roughness	coarse	fine
Surface be contacted	wide	narrow
Works hardness	soft	hard

E. Bond:

V: Vitrified,

S: Silicate,

B: Resinoid,

R: Rubber,

E: Shellac

K. Wheel Be Recommended

Material be ground \ Wheel diameter		Under 205mm	205 to 355mm
Carbon steel	under HRC25°	WA A 46K	WA A 46J
	above HRC25°	WA 46J	WA 46I
Alloy steel	under HRC55°	SA WA 46J	SA WA 46I
	above HRC55°	SA WA 46H	SA WA 46G
Tool steel	under HRC60°	SA WA 46I	SA WA 46H
	above HRC60°	SA WA 46H	SA WA 46H
Stainless steel		SA WA 46 I	SA WA 46H
Cast iron		C 46J	C 46I
Brass		C 30J	C 30 I
Aluminum alloy		C 30J	C 30 I
Tungsten Carbide		GC 60H-100I	GC 60H-100I
Glass		C 60K	C 60K
Marble		C GC 36M	C GC 36M

L. Choice Of The Grinding Conditions

(1). Down feed of grinding wheel

Work material \ Finish	Down feed			Cross feed
	Cast iron, Soft steel, Hardened steel	Stainless & Heat resistant steel	Tool steel	
Fine	0.0002-0.0004" 0.005-0.01mm		0.0002-0.0006" 0.005-0.015mm	under $\frac{1}{4}$ of wheel thickness
Rough	0.0006-0.0012" 0.015-0.03mm	0.0008-0.0012" 0.02-0.03mm	0.0008-0.0012" 0.02-0.03mm	under $\frac{1}{2}$ of wheel thickness

Down feed	Great	Small
Grinding resistance	great	small
Heat produced	much	less
Surface finish	rough	fine
Wheel worn out	much	little

(2). Cross feed

Cross feed	Great	Small
Grinding resistance	great	small
Heat produced	much	less
Surface finish	rough	fine
Wheel worn out	much	little

(3). Table longitudinal traverse

Table traverse	Quick	Slow
Grinding resistance	great	small
Heat produced	less	much
Surface finish	rough	fine
Wheel worn out	much	little

Suitable speeds of the table traverse

Work material	Soft steel	Heat treated steel	Tool steel	Cast iron
Speed: M/Min.	6-15	20-25	6-25	16-20

(4). Suitable peripheral speeds of wheel : 1200-1800M/Min.

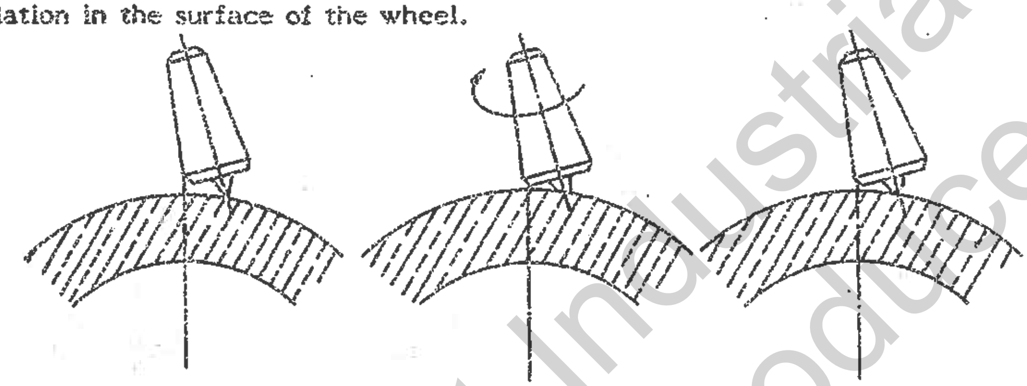
Condition \ Wheel speed	Quick	Slow
Grinding resistance	small	great
Heat produced	much	less
Surface finish	fine	rough
Wheel worn out	small	great
Safety	bad	better

Material	Peripheral speed
Steel	20-30M/Min.
Cast iron	18-20M/Min.
Tungsten Carbide	8-18M/Min.
Zinc alloy and light metal	25-30M/Min.

M. Use Of The Optional Attachments

(a). Parallel Dressing attachment (Standard Accessory)

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



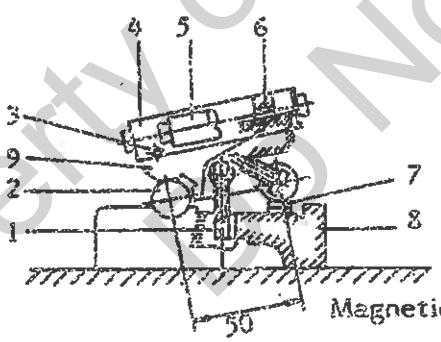
(b). Angle forming attachment

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

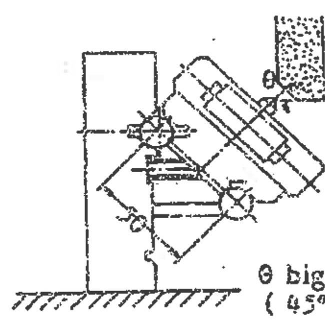
(2) The value in question will be the Sine of the angle times 50. That is B=Sinθ x 50

(3) Get a Block gauge the thickness of which equals that of B (or make one)

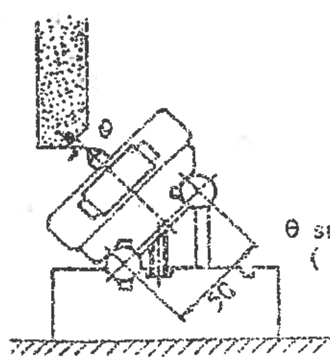
(4) Put this Block gauge under the base of the Sine Bar stand. Fix with the fastening bolts and the forming is done.



Magnetic chuck



θ bigger than 45°
(45°-90°)



θ smaller than 45°
(0°-45°)

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

(c). Sine Bar

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

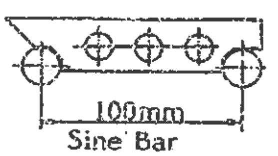
(1) The value in question equals the Sine of the angle times 100, $B=\sin\theta \times 100$

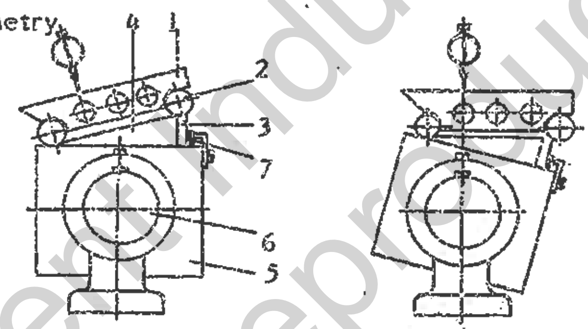
(2) Get a block gauge the thickness of which equals that of B.

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

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

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



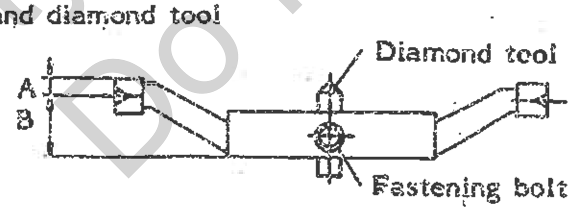


(d) . Radius Forming Attachment

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



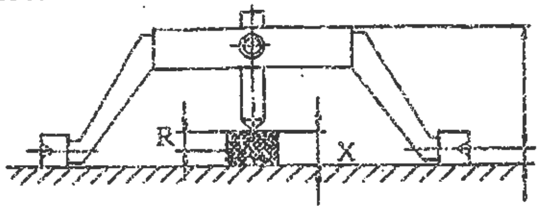
A name plate is attached to the swing rod with the A and B to mean:
A: the distance between the upper rim and the center
B: the distance between the bottom rim and the center
The R forming is the adjustment of the distance between the diamond tool and the swing rod center so that the R shaping results.

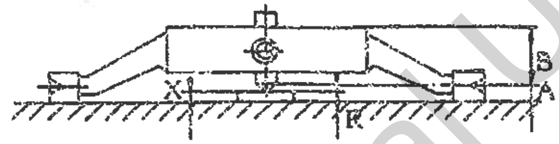
(3) To determine the concave and convex R:

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

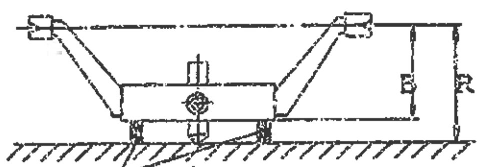
b. To determine the convex R: Put the swing rod on a place disk. Put a block gauge of proper thickness under the diamond tool. Then R = X-A

c. To determine the small concave R

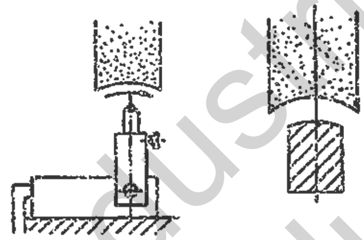




d. To determine the big concave R: R= B+X.



Same thickness block gauge



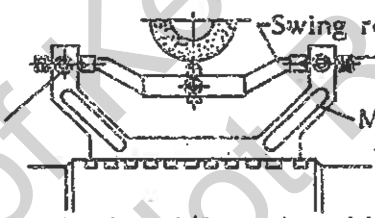
Workpiece

e. Note:

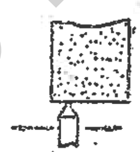
1. The base and side of the grinding wheel shall be well-dressed.
2. The Radius Forming Attachment shall be parallel to the grinding wheel.
3. The diamond tool shall be parallel to the Radius Forming Attachment.

(4) Operation of the Radius forming attachment:

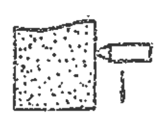
a. Find the center of the grinding wheel. then fix the work table.



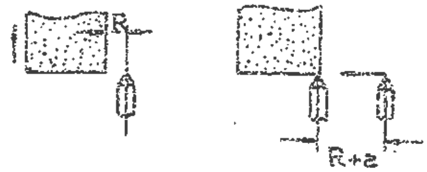
b. Turn the down-feed handwheel at 1/3 on the width of the wheel so that the wheel cuts into 0.02mm of the diamond tool. Now turn the cross feed handwheel to dress the grinding wheel, and turn the calibration reading on the down feed back to zero.



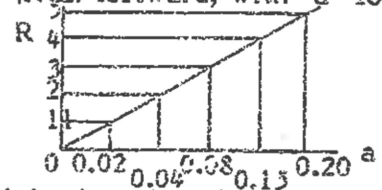
c. Turn the diamond tool over an angle 90° and elevate it into a proper position (greater than the R size in question)



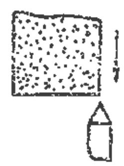
d. Elevate the grinding wheel so that it goes away from the diamond tool and the wheel in such a position that the distance betwen the side of the wheel and the center of the Diamond tool is just R.



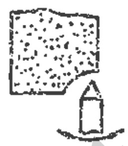
e. Move the diam3nd tool (R+a) leftward, with "a" found in the following table.



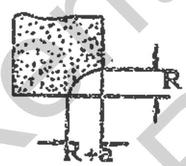
f. Turn the downfeed handwheel so that the grinding wheel approaches the diamond tool.



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

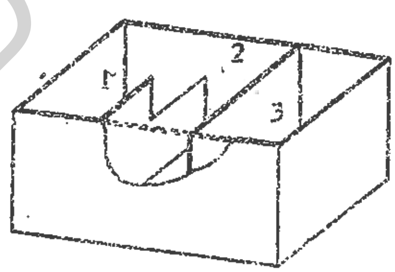


h. The wheel finally becomes the following shape.



(e). Coolant System

Insert the power source plug in socket (at the rear side of electric control box).
Press the pushbutton switch to start the coolant pump, the pump should rotates in clockwise direction, if not, interchange the any two cords of three-cord cable.
Adjust coolant flow by turning the ball valve to suitable rate.
Cooling water collected from table and returns to coolant tank through return hose then 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, in which case the efficiency is higher, and the surface roughness is better.

(2)

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

(3)

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

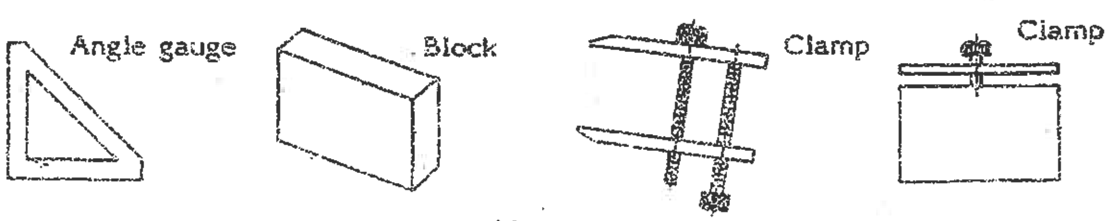
(4)

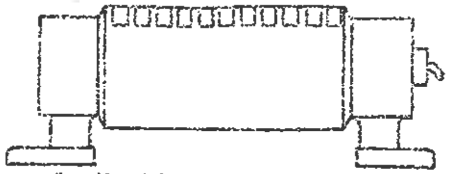
The "Relief Angle" of the wheel is lower than the surface of the work, so that the work face becomes two sections, the upper section resembling that in (3) and the lower section in (1). Now it is necessary to enlarge the "Relief Angle" part so that it will higher than the face of the work.

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

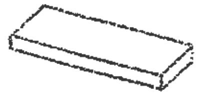
(g) . Right Angle Grinding

(1) Tools

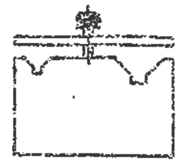




Inclinable Magnetic Chuck



Block gauge

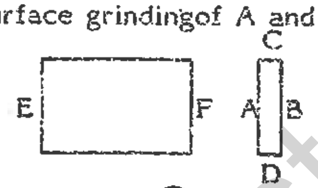


Clamp

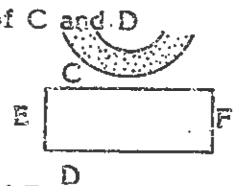
(2) Use of the jigs and tools: take the grinding of the block of six faces A, B, C, D, E, F. For example:

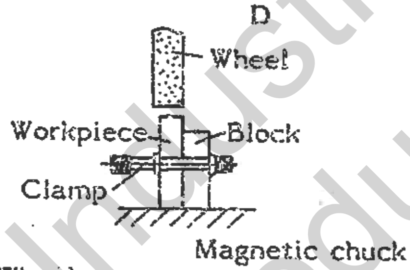
a. Under 200mm:

* Grinding of the first basic face, or the surface grindingof A and B,

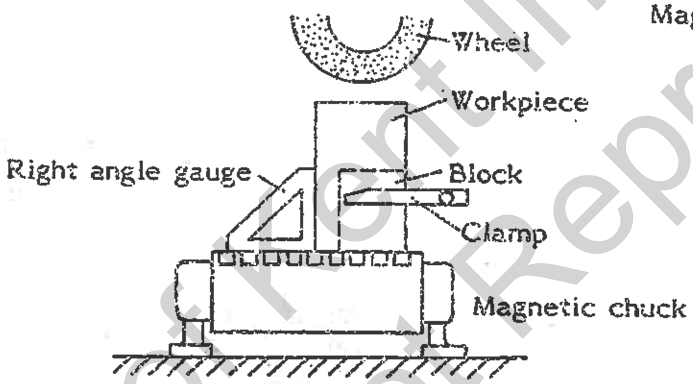


* Grinding of C and D





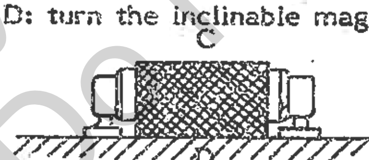
* Grinding of E and F



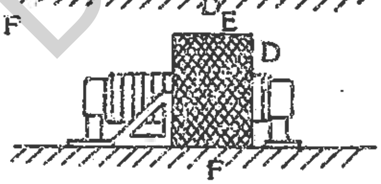
b. Over 200mm:

* Grinding of the first basic face or A.

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



* Grinding of E and F



(3) Precaution: The grinding of right angle depends on the patience and clever mindedness of the operator for its precision. For inatance, 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.

N). COMPLETE KNOCKDOWN DRAWING AND PARTS LSITS

****

* When you order the parts, please indicate the following items:

1). Machine Model and Serial No.

2). Index Number.

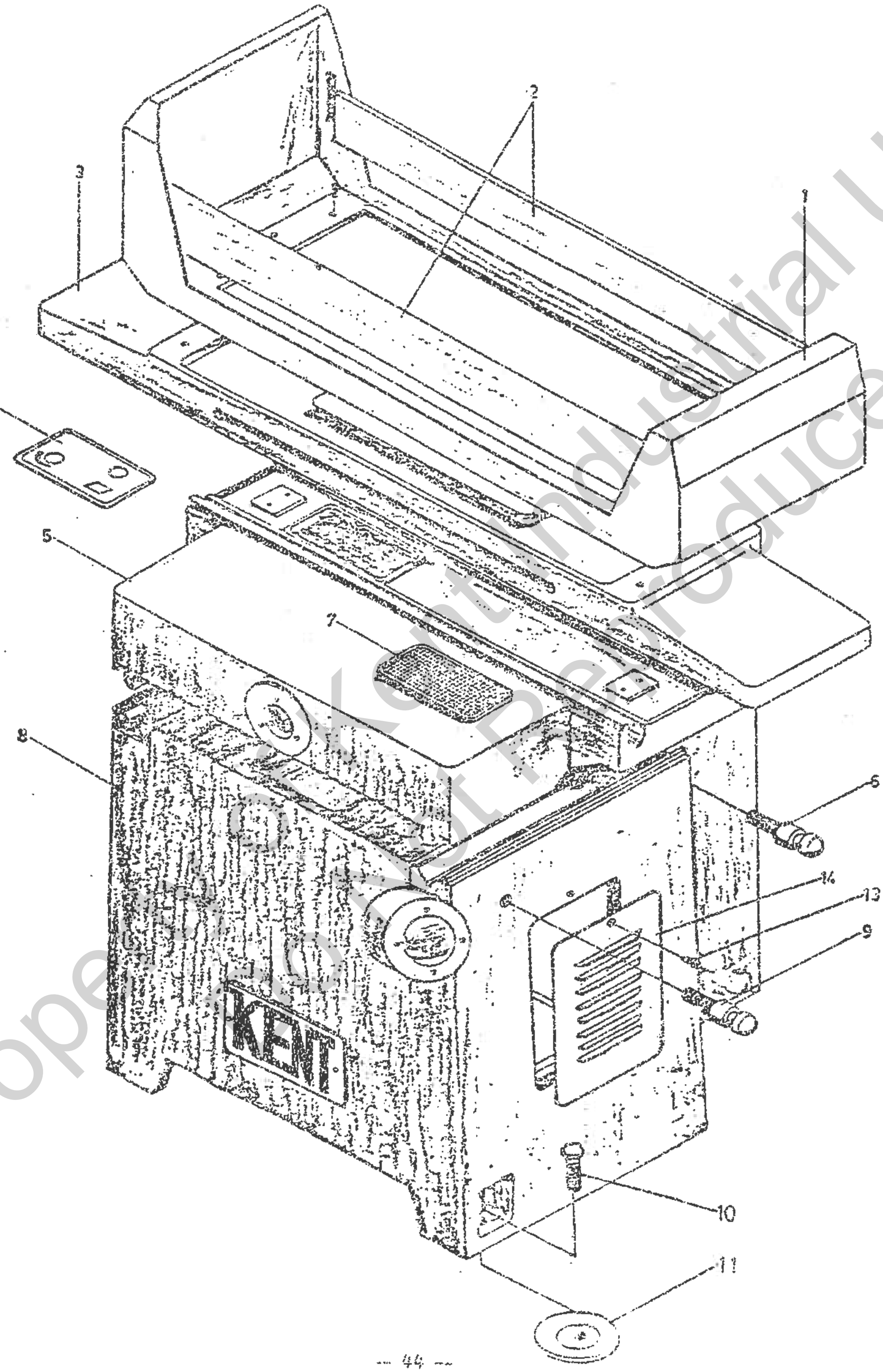
3). Parts Number and Parts Name.

4). Quality.

Thank you !

CONTENTS

COLUMN, SADDLE & TABLE ASS'Y



COLUMN, SADDLE & TABLE ASS'Y

Index No.	Parts No.	Parts Name	Q'ty
1.	301314	Splash Guard	1
2.	301315	Splash Guard	4
3.	301104	Table	1
4.	301132	Hydraulic Panel	1
5.	301103	Saddle	1
6.	910302	Lifting bolt (Long)	2
7.	251131	Rubber plate	1
8.	301101	Bed	1
9.	910301	Lifting bolt (short)	2
10.	910204	Levelling Screw	3
11.	910203	Levelling Pad	3
12.	461105	Trade mark plate	1
13.	F40408C	Socket head cap screw	2
14.	301112	Side cover	2

TABLE & SADDLE ASS'Y

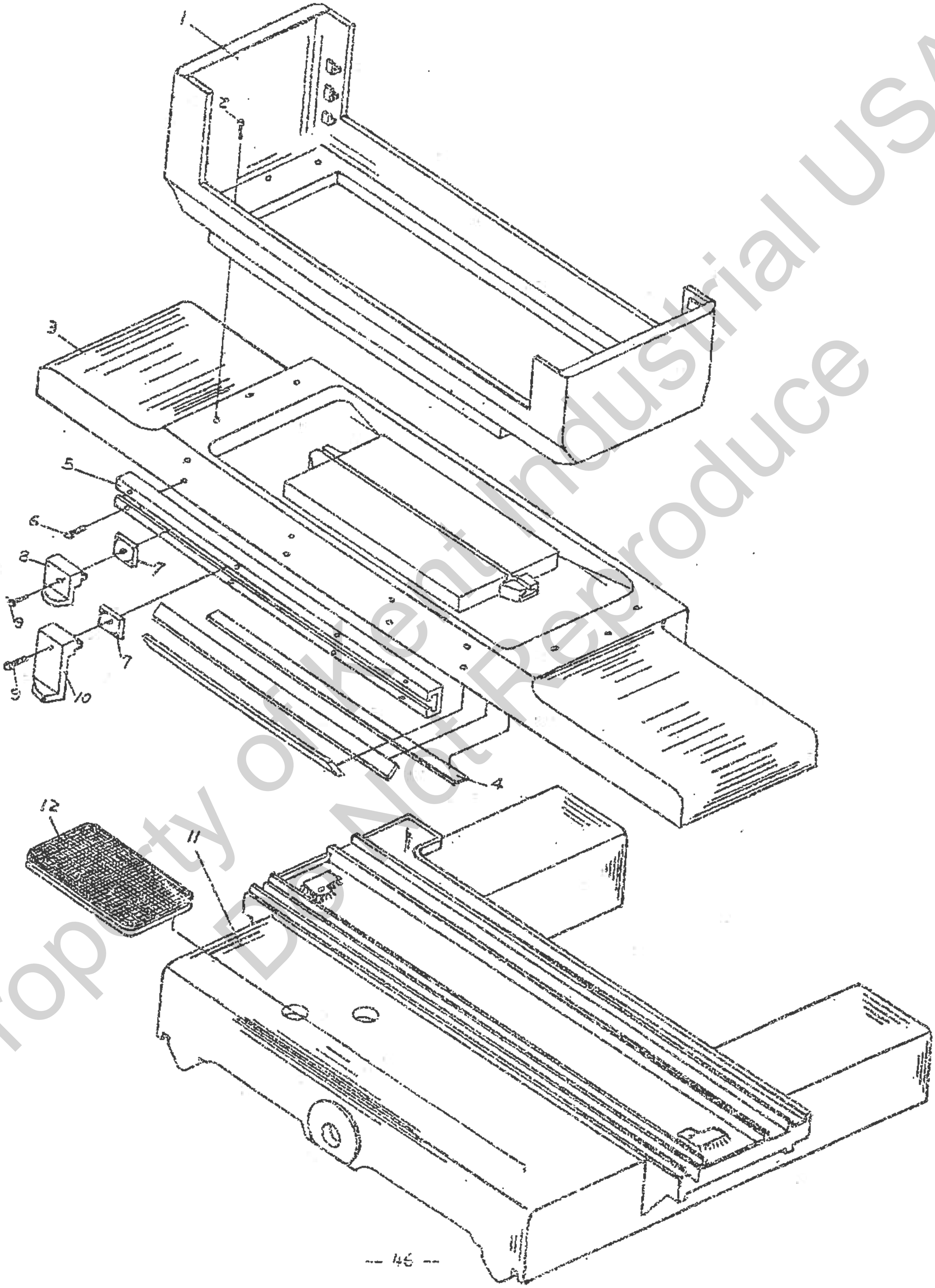
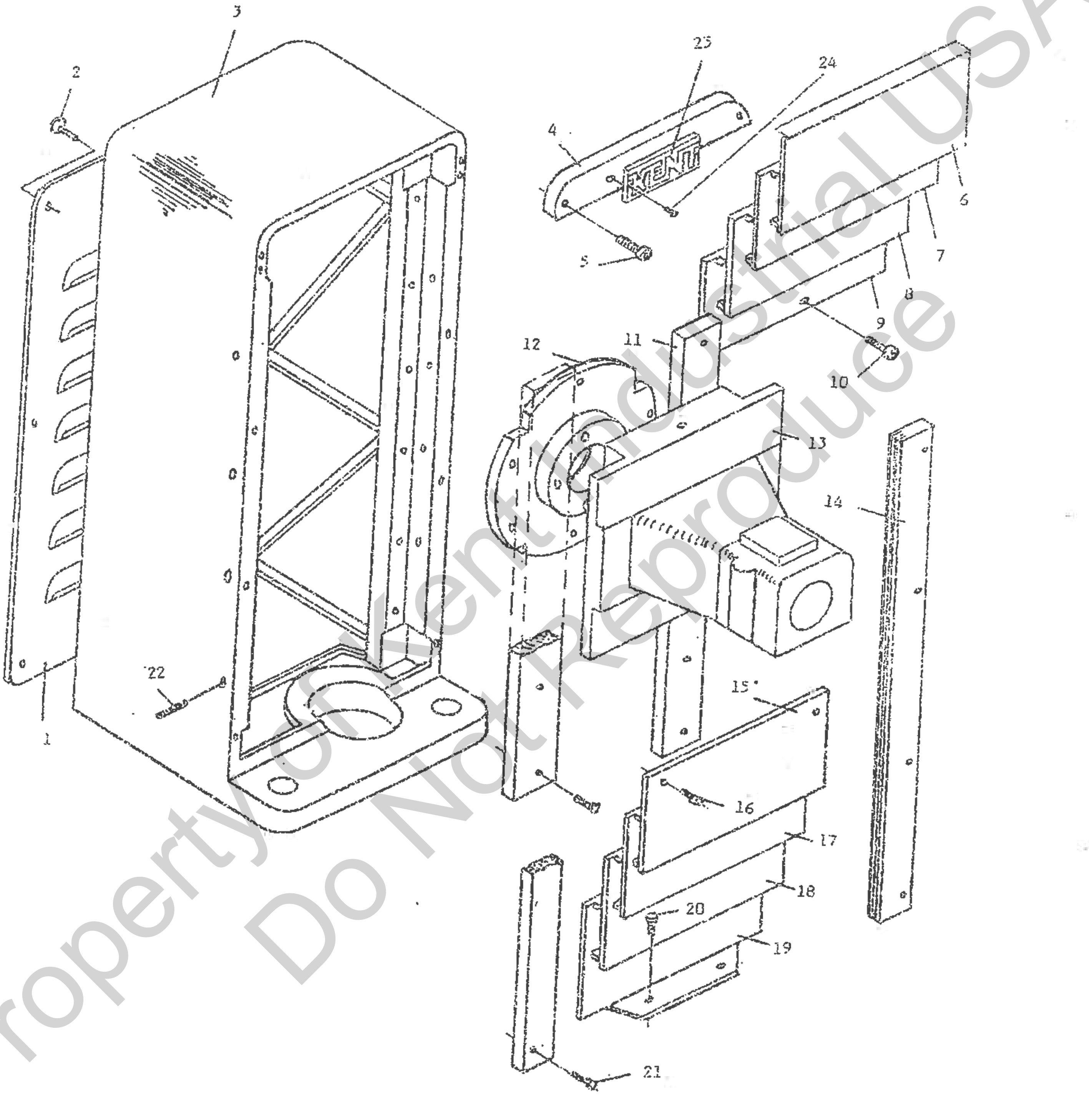


TABLE & SADDLE ASS'Y

Index No.	Parts No.	Parts Name	Q'ty
1.	301314	Splash Guard	1
2.	F10606C	Socket head cap screw	4
3.	301104	Table	1
4.	JT41080	Teflon	3
5.	411677	Shield Guard for dog	1
6.	F10406C	Socket head cap screw	8
7.	411678	Nut	2
8.	301675	Dog (left)	1
9.	FS0507C	Set screw	2
10.	301674	Dog (right)	1
11.	301103	Saddle	1
12.	251131	Rubber palte	1

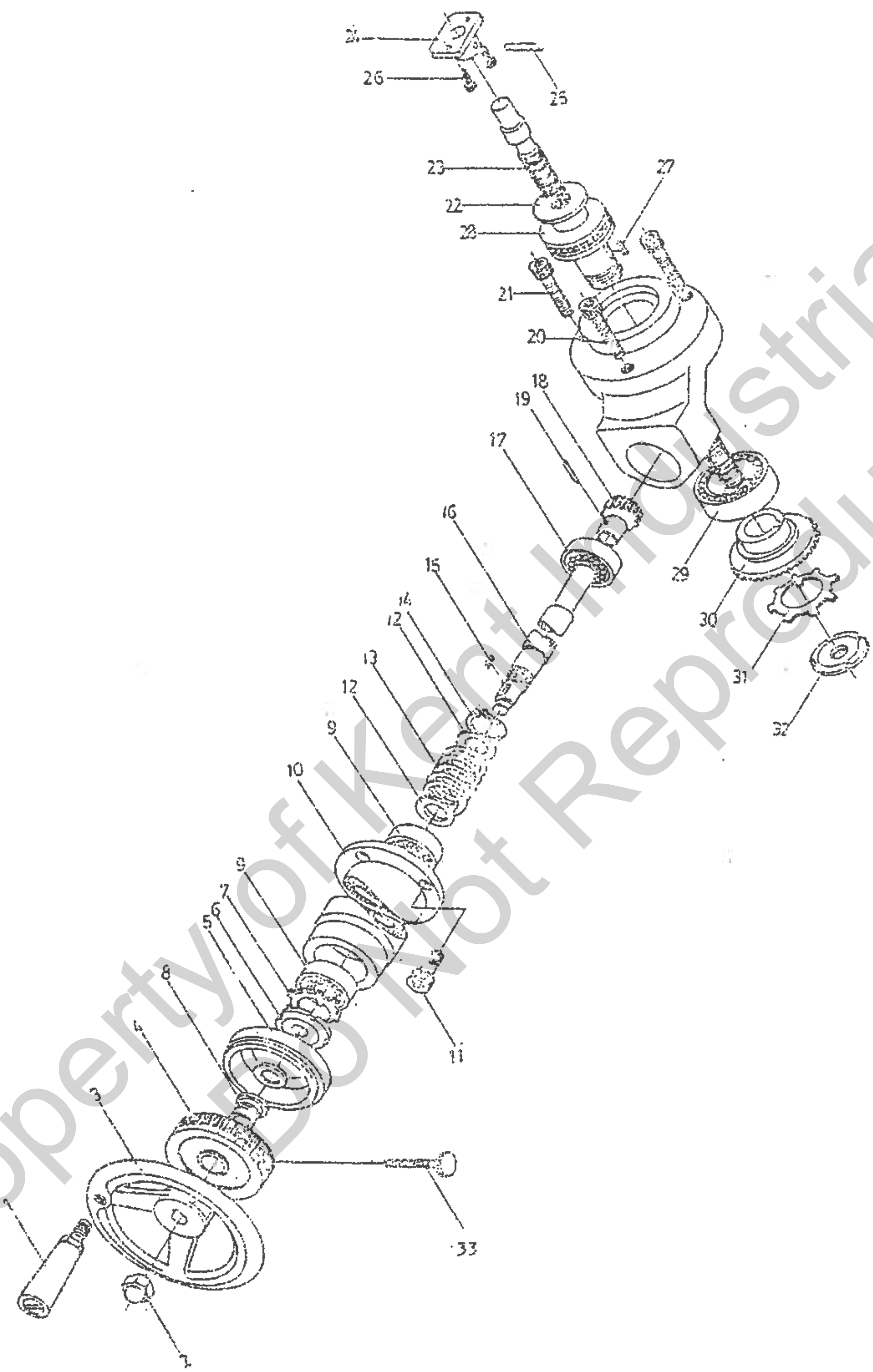
COLUMN ASS'Y



COLUMN ASS'Y

Index No.	Parts No.	Parts Name	Q'ty
1.	301121	Column rear cover	1
2.	F40403C	Round head screw	8
3.	301102	Column	1
4.	301417	Column front cover	1
5.	F10406C	Socket head cap screw	2
6.	301425	Dust Shield (Upper 1 #)	1
7.	301426	Dust Shield (Upper 2 #)	1
8.	301426	Dust Shield (Upper 3 #)	1
9.	301427	Dust Shield (Upper 4 #)	1
10.	F50303C	Socket head cap screw	1
11.	301416	Vertical slidway	1
12.	301412	Spindle housing (HEAD B)	1
13.	301411	Motor fixing plate (HEAD A)	1
14.	301415	Shield Guard	2
15.	301428	Dust Shield (Down 1 #)	1
16.	F50303C	Socket head cap screw	2
17.	301426	Dust Shield (Down 2 #)	1
18.	301426	Dust Shield (Down 3 #)	1
19.	301429	Dust Shield (Down 4 #)	1
20.	F40303C	Round head screw	2
21.	F10610C	Socket head cap screw	12
22.	F20608C	Set screw	12
23	251418	Column name palte	1
24.	F40308C	Round head screw	2

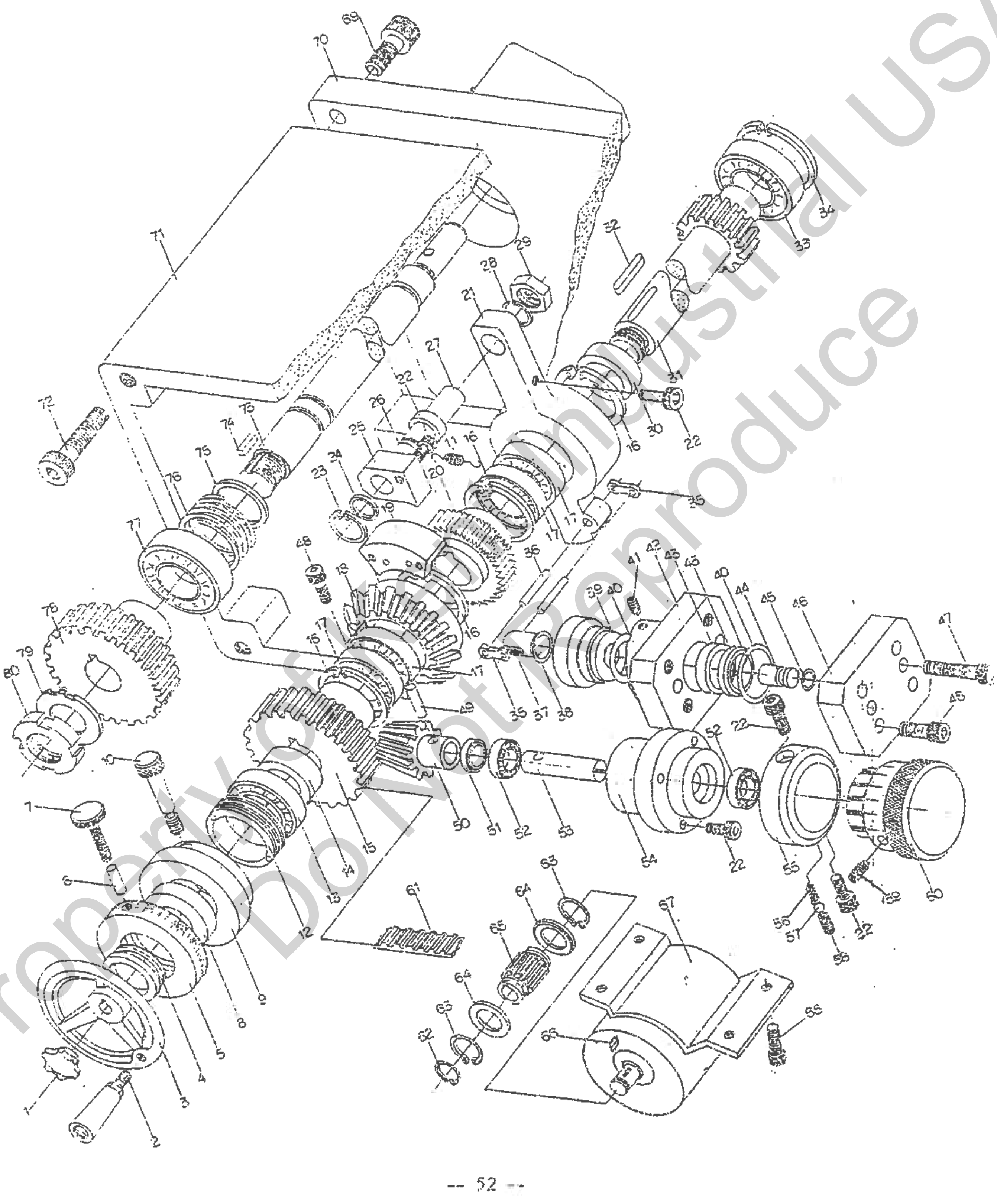
DOWNFEED ASS"Y (KGS-306H, AH)



DOWNFEED ASS'Y (KGS-306H, AH)

Index No.	Parts No.	Parts Name	Q'ty
1.	910103	Grip	1
2.	910121	Handwheel	1
3.	910101	Handwheel Nut	1
4.	301401	Graduation Dial	1
5.	301404	Graduation Dial Holder	1
6.	WNA004R	Check Nut	1
7.	WWA004	Ratchet washer	1
8.	W000R52	Snap ring	1
9.	B120500	Selt-Aligning ball bearing	2
10.	301405	Bearing housing	1
11.	F10510C	Socket head cap screw	3
12.	251407	Washer	2
13.	251408	Spring	1
14.	W000S25	Snap ring	1
15.	WDK5520	Key	1
16.	301406	Shaft	1
17.	B6204ZZ	Ball bearing	2
18.	251409	Small bevel gear	1
19.	WPS0530	Spring pin	1
20.	301434	Bevel gear bracket	1
21.	F10808C	Scoket head cap screw	3
22.	251432	Elevating leadscrew nut	1
23.	301431	Elevating Leadscrew	1
24.	251433	Connector	1
25.	WPS0430	Spring pin	1
26.	F10508 C	Socket head cap screw	2
27.	WDK7525	Key	1
28.	B511080	Thrust Ball bearing	1
29.	B601100	Ball bearing	1
30.	251435	Bevel gear	1
31.	WWA0008	Ratchet washer	1
32.	WNA0008	Check nut	1
33.	251205	Adjusting screw	1

AUTO DOWNFEED ASS'Y (KGS-306AHD)



AUTO DOWNFEED ASS'Y (KGS-306AHD)

Index No.	Parts No.	Parts Name	Q'ty
1.	910101	Cap nut	1
2.	910131	Grip	1
3.	910121	Handwheel	1
4.	301811	Graudation dial bushing	1
5.	301801(301881 in)	Graduation dial	1
6.	251203	Pin	1
7.	251205	Fixed Screw	1
8.	301813	Collar.	1
9.	301802	Indicating rign	1
10.	251531	Adjusting screw	1
11.	301826	Spring	1
12.	301814	Collar	1
13.	B520300	Bearing	1
14.	301827	Spacer	1
15.	301828	Timing belt gear	1
16.	W000R35	Snap ring	1
17.	B6003ZZ	Ball bearing	2
18.	411820	Bevel gear	1
19.	301816	Slipper	1
20.	411818	Ratchet gear	1
21.	411813	Transmission arm	1
22.	F10304C	Socket head cap screw	8
23.	W000S10	Snap ring	1
24.	411816	Spacer	1
25.	411815	Transmission claw	1
26.	411814	Transmission claw shaft	1
27.	411819	Spacer	1
28.	WWF0006	Washer	1
29.	WNH006C	Hexagonal screw	1
30.	391817	Spacer	1
31.	301822	Shaft	1
32.	WDK5545	Kwy	1
33.	B520400	Bearing	1
34.	W000R47	Snap Ring	1
35.	DC40001	Chain	1
36.		Chain connector	2
37.	411843	Cylinder Rod	1
38.	G000P12	O-ring	1
39.	411844	Cylinder cover	1
40.	G000G25	O-ring	2

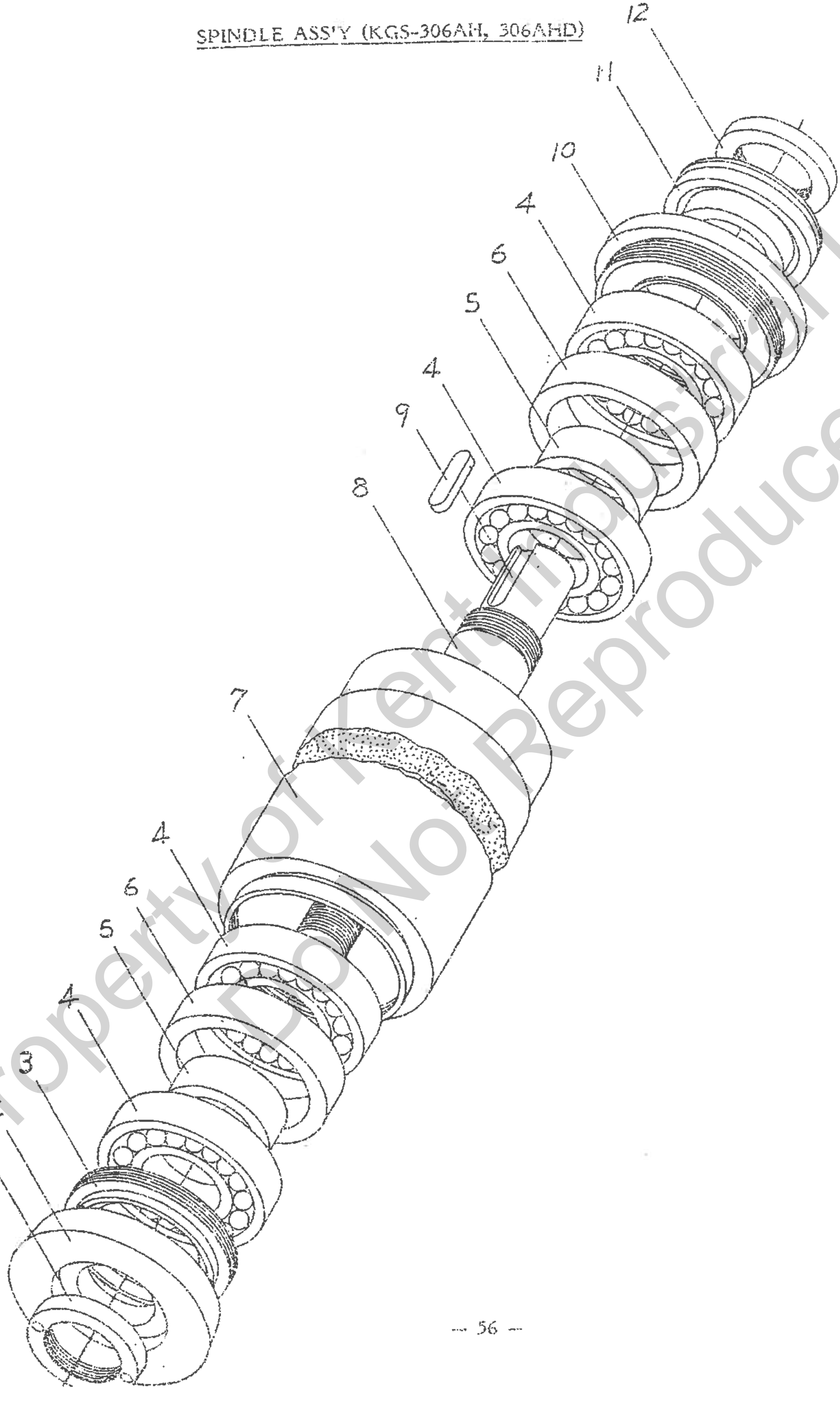
AUTO DOWNFEED ASS'Y (KGS-306AHD)

Index No.	Parts No.	Parts Name	Q'ty
41.	F20302C	Set screw	1
42.	411842	Cylinder	1
43.	GUSH224	V-packing	2
44.	411835	Cooper bushing	1
45.	G0000P7	O-ring	1
46.	411841	Cylinder cover	1
47.	F10314C	Socket head cap screw	2
48.	F10306C	Socket head cap screw	5
49.	WPS0425	Pin	1
50.	301837	Small bevel gear	1
51.	411836	Spacer	1
52.	B6001ZZ	Bearing	2
53.	411834	Small gear shaft	1
54.	411833	Fixed bush	1
55.	411832	Fixed indicator	1
56.	301825	Spring	1
57.	WSB0003	Steel ball	1
58.	F20406C	Set screw	1
59.	F20404C	Set screw	1
60.	301831 (mm)	Indicator dial	1
	301883(inch)	Indicator dial	
61.	DT187L3	Timing belt	1
62.	W000S12	Spring washer	1
63.	W000S25	Spring washer	2
64.	301829	Washer	2
65.	301830	Small belt pulley	1
66.	WDK4414	Key	1
67.	MS2512A	1/8 HP motor	1
68.	F10506C	Socket head cap screw	4
69.	F10606C	Socket head cap screw	4
70.	301807	Housing	1
71.	301805	Gear box	1
72.	F10408C	Socket head cap screw	4
73.	301822	Shaft	1
74.	WDK5525	Key	2
75.	251407	Washer	1
76.	251408	Spring washer	1
77.	B520400	Bearing	1
78.	301823	Gear	1

AUTO DOWNFEED ASS'Y (KGS-306AHD)

Index No.	Parts No.	Parts Name	Q'ty
79.	WWA004	Washer	1
80.	WNA004R	Nut	1

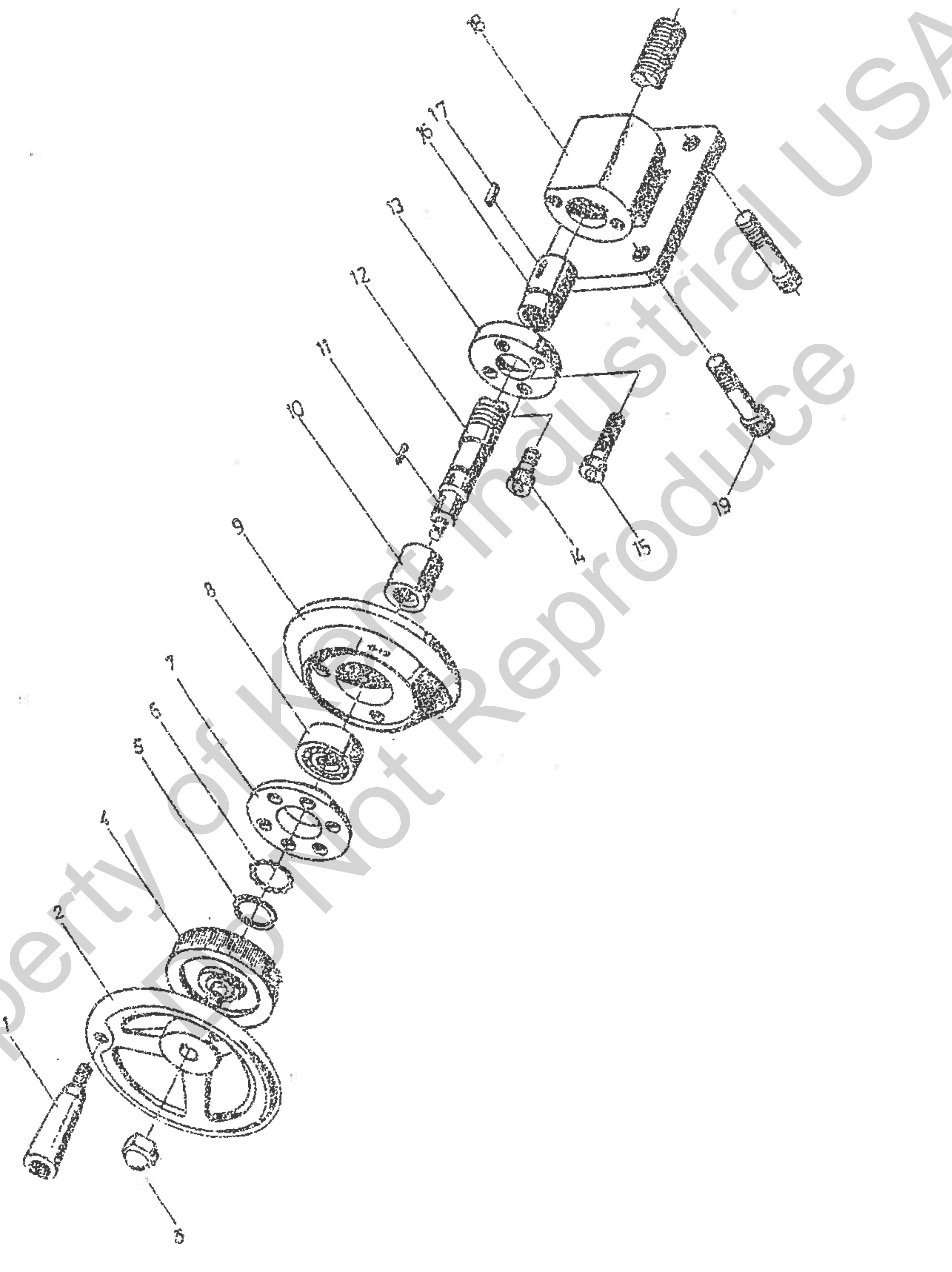
SPINDLE ASS'Y (KGS-306AH, 306AHD)



SPINDLE ASS'Y (KGS-306AH, 306AHD)

Index No.	Parts No.	Parts Name	Q'ty
1.	301503	Spindle nut	1
2.	301505	Spindle cover	1
3.	301504	Spindle cover	1
4.	B7207G	Bearing	4
5.	301507	Spacer	2
6.	301506	Spacer	2
7.	301501	Spindle housing	1
8.	301502	Sahft	1
9.	WDK7735	Key	1
10.	301508	Shindle cover	1
11.	301509	Spindle cover	1
12.	301510	Spindle nut	1

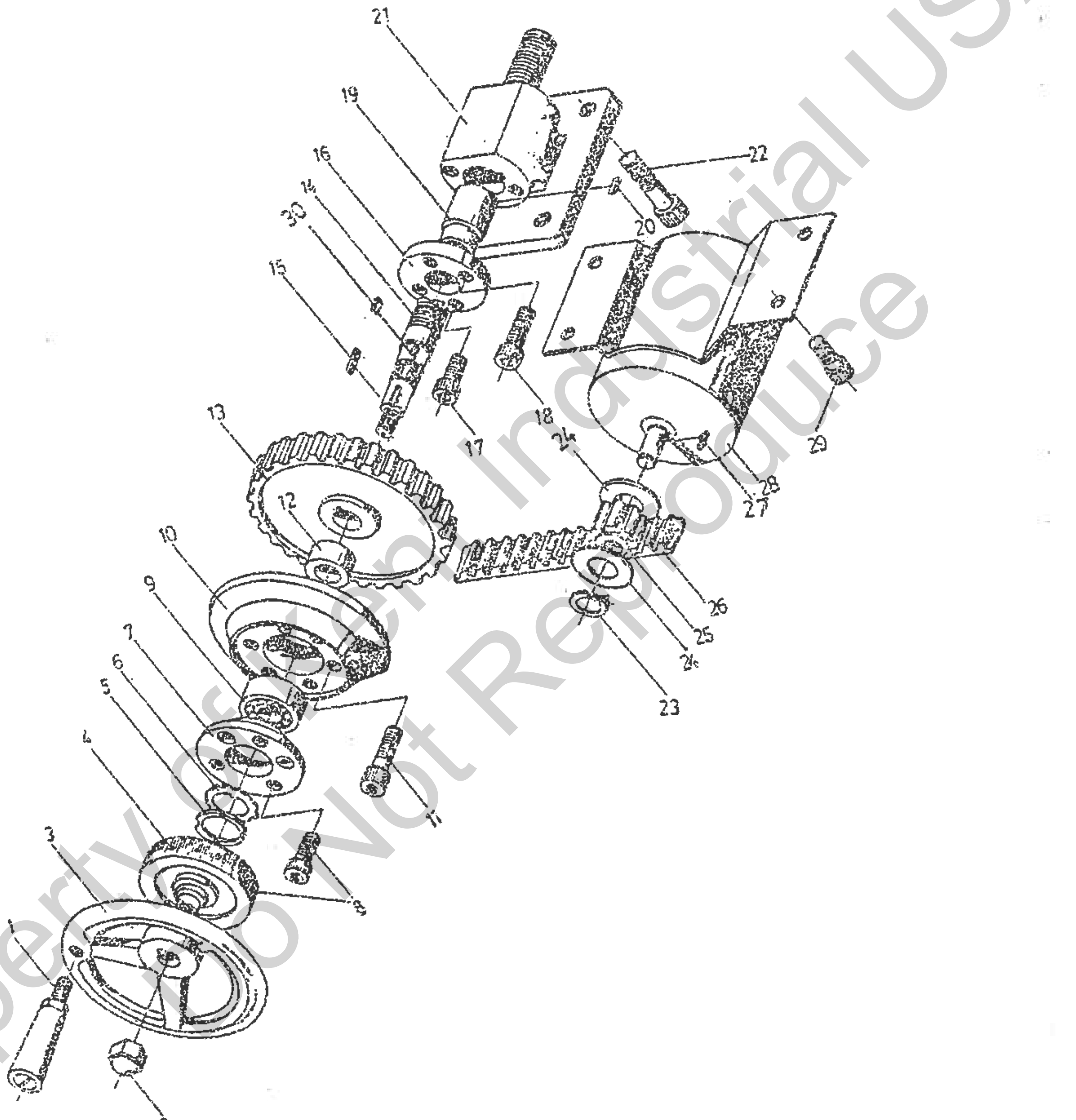
CROSSFEED ASS'Y (KGS-306H)



CROSSFEED ASS'Y (KGS-306AH)

Index No.	Parts No.	Parts Name	Q'ty
1.	910131	Grip	1
2.	910121	Handwheel	1
3.	910101	Handwheel nut	1
4.	301201	Graduation dial	1
5.	WNA004R	Check nut	1
6.	WWA0004	Ratchet washer	1
7.	251206	Bearing housing	1
8.	B320400	Bearing	1
9.	301204	Graduation dial holder	1
10.	251207	Spacer	1
11.	WDK5530	Key	1
12.	301211	Crossfeed Leadscrew	1
13.	301221	Leadscrew bracklash adjuster	1
14.	F10506C	Socket head cap screw	2
15.	F10508C	Socket head cap screw	2
16.	251212	Leadscrew nut	1
17.	WDK5520	Key	1
18.	301222	Crossfeed leadscrew nut base	1
19.	F10618C	Socket head cap screw	4

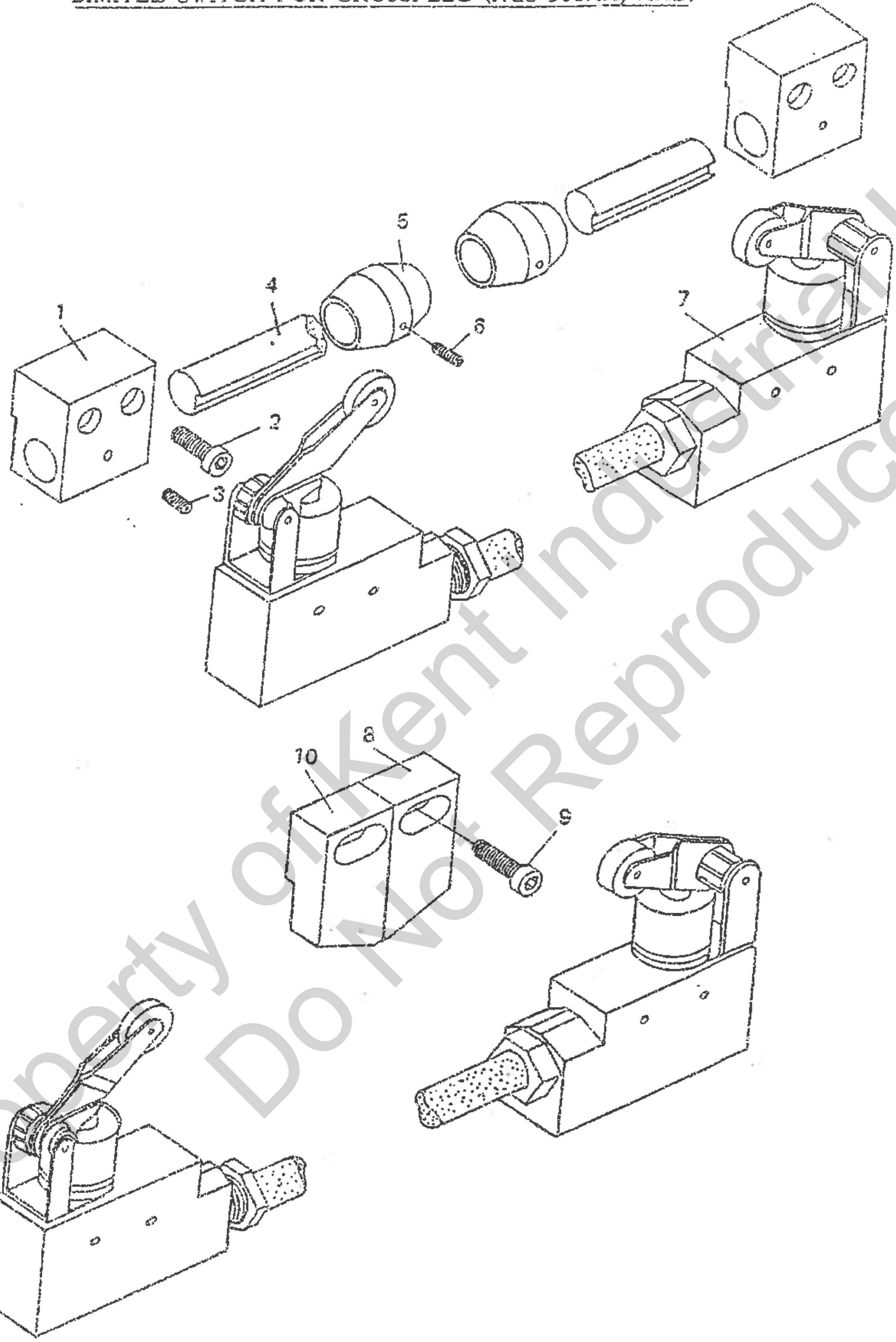
CROSSFEED ASSY (KGS-306AH, AHD)



CROSSFEED ASS'Y (KGS-306AH, AHD)

Index No.	Parts No.	Parts Name	Q'ty
1.	910103	Grip	1
2.	910101	Handwheel nut	1
3.	910121	handwheel	1
4.	301201	Graduation dial	1
5.	WNA004R	Hexagonal nut	1
6.	WWA0004	Ratchet washer	1
7.	251206	Bearing retainer	1
8.	F10404C	Socket head cap screw	3
9.	B320400	Bearing	1
10.	301204	Graduation dial holder	1
11.	F10408C	Socket head cap screw	3
12.	251231	Spacer	1
13.	251232	Timing belt pulley	1
14.	301211	Crossfeed leadscrew	1
15.	WDK5530	Key	1
16.	301221	Leadscrew backlash adjuster	1
17.	F10506C	Socket head cap screw	2
18.	F10508C	Socket head cap screw	2
19.	251212	Leadscrew nut	1
20.	WDK5520	Key	1
21.	301222	Crossfeed leadscrew nut base	1
22.	F10618C	Socket head cap screw	4
23.	W000S11	Snap ring	1
24.	251233	Washer	2
25.	251234	Timing belt pulley	1
26.	DTL0503	Timing belt	1
27.	WDK4410	Key	1
28.	MS2512A	Crossfeed motor	1
29.	F10506C	Socket head cap screw	4
30.	WDK5515	Key	1

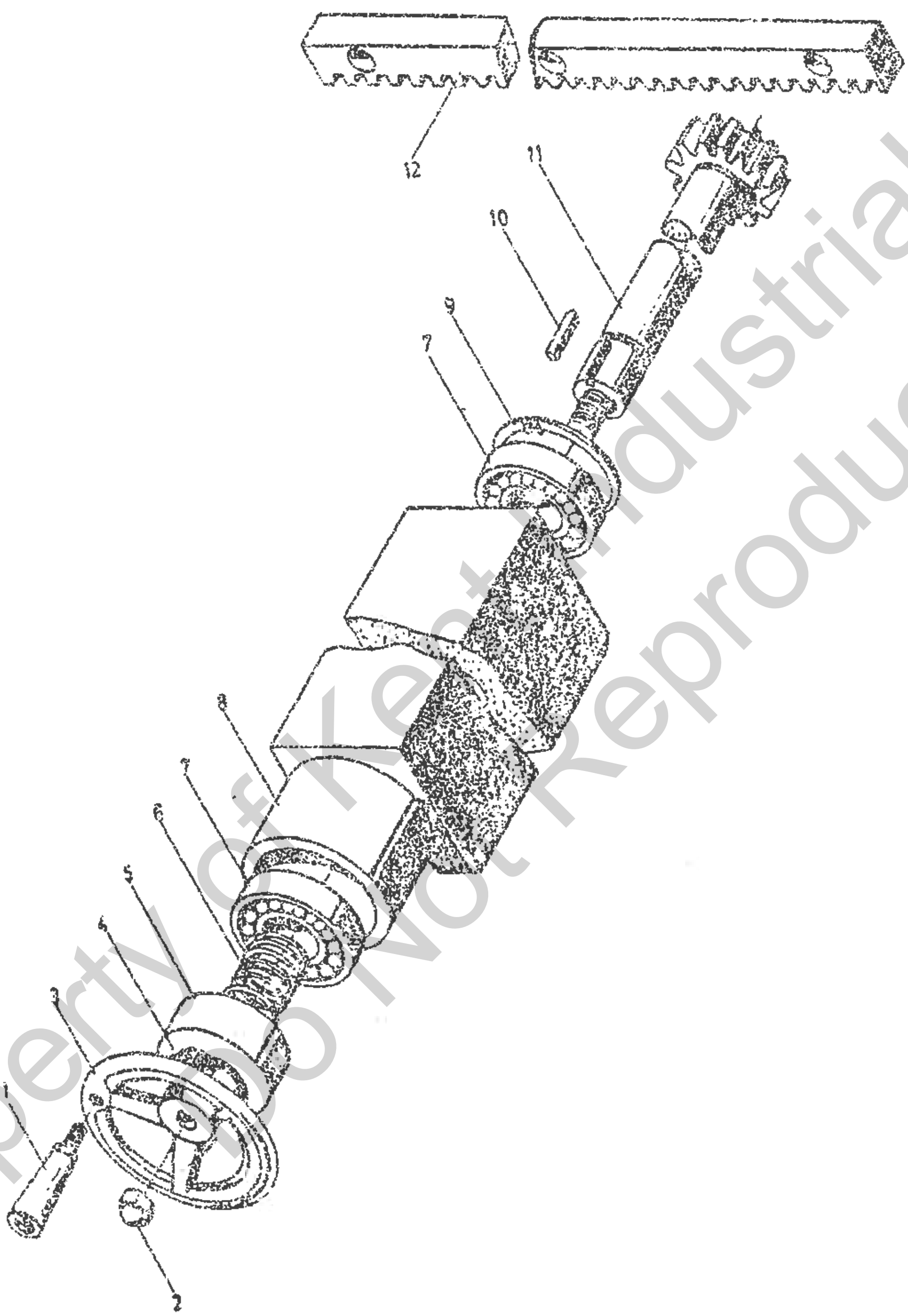
LIMITED SWITCH FOR CROSSFEED (KGS-306AH, AHD)



LIMITED SWITCH FOR CROSSFEED (KGS-306AH, AHD)

Index No.	Parts No.	Parts Name	Q'ty
1.	251551	Bracket	2
2.	F10408C	Socket head cap screw	4
3.	F20402C	Set screw	2
4.	301552	Pad rod	1
5.	251553	Dog	2
6.	F20403C	Set screw	2
7.	E31151	Limti Switch	2
8.	251554	Dog	1
9.	F10406C	Socket head cap screw	2
10.	251555	Dog	1

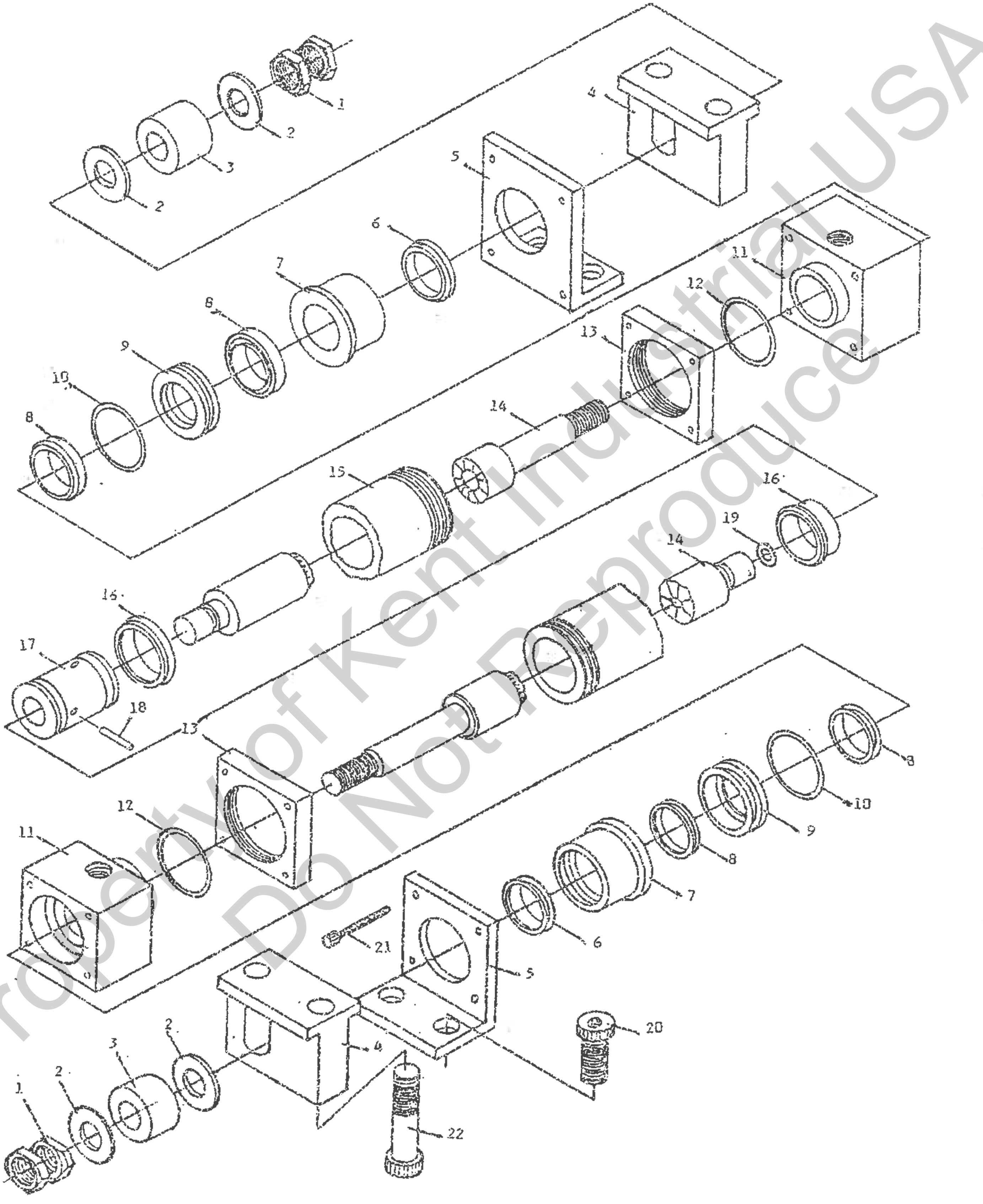
LONGITUDINAL HAND WHEEL ASS'Y (KGS-306H,AH, [illegible])



LONGITUDINAL HAND WHEEL ASS'Y (KGS-306H, AH, AHD)

Index No.	Parts No.	Parts Name	Q'ty
1.	910131	Grip	1
2.	910101	Handwheel nut	1
3.	910121	Handwheel	1
4.	W000S17	Snap ring	1
5.	251351	Bush	1
6.	251352	Spring	1
7.	B6003Z0	Bearing	2
8.	301353	Frame	1
9.	W000R35	Snap ring	1
10.	WDK5520	Key	1
11.	301354	Pinion shaft	1
12.	301355	Gear Rack	1

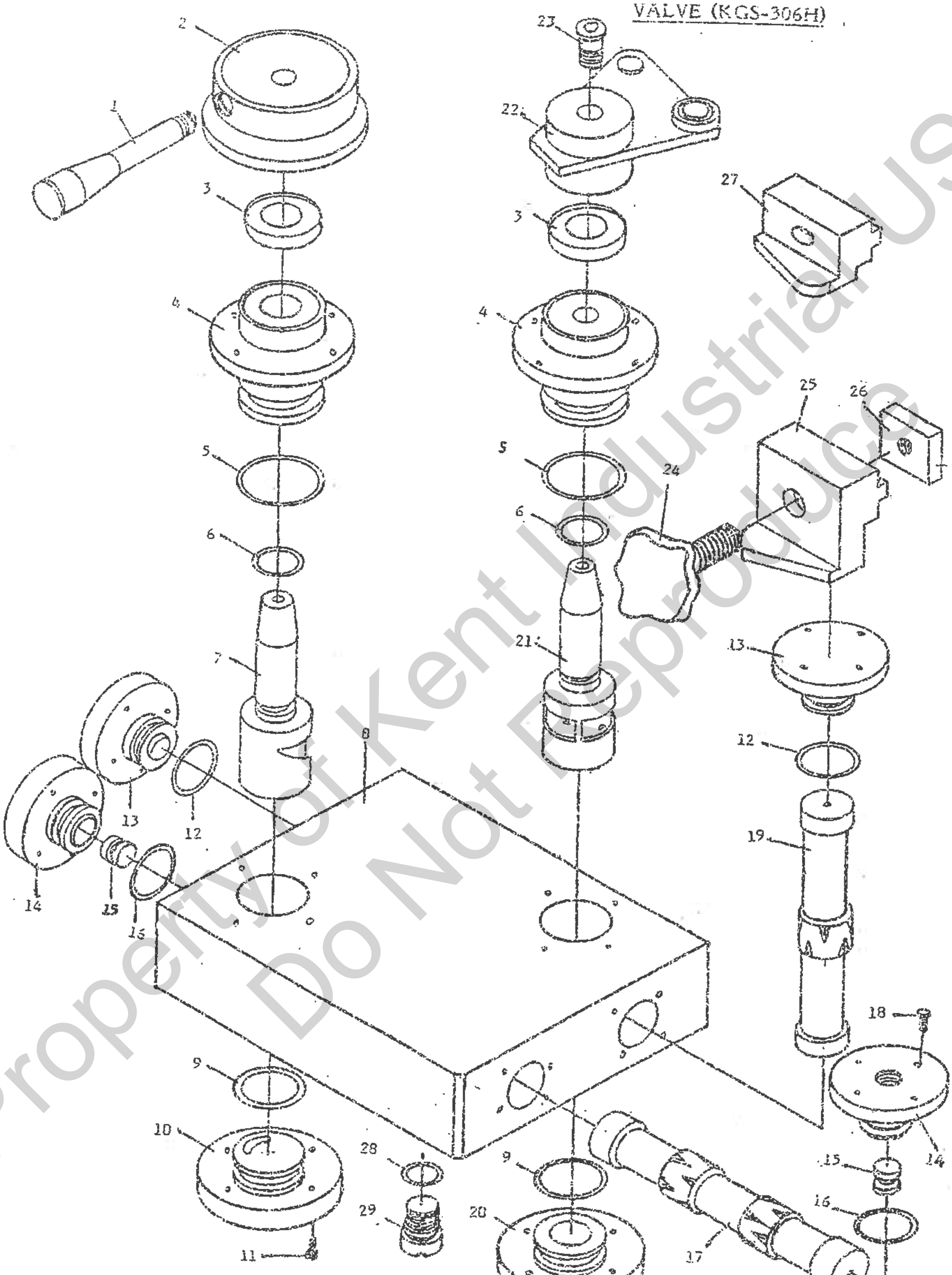
CYLINDER ASS'Y (KGS-306H, AH, AHD)



CYLINDER ASS'Y (KGS-306H, AH, AHD)

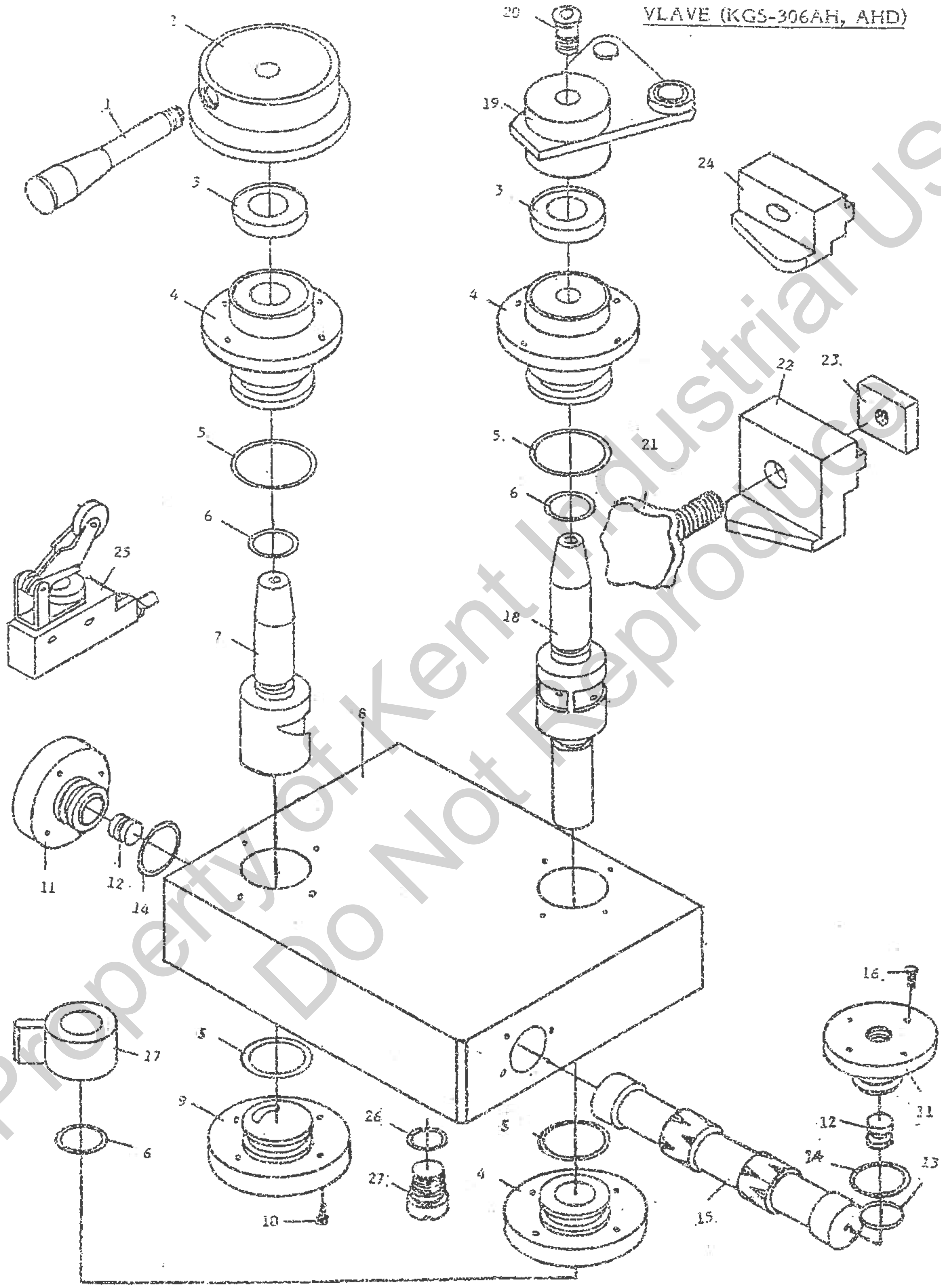
Index No.	Parts No.	Parts Name	Q'ty
1.	WNH006F	Hexagonal nut	4
2.	WWF0006	Washer	4
3.	251672	Spacer (Rubber)	2
4.	251673	End bracket	2
5.	301653	Cylinder bracket	2
6.	GS19284	U-Packing	2
7.	301654	Oil seal bracket	2
8.	GUOUN20	U-Packing .	6(4)
9.	301655	O-Ring seat	2
10.	G000G35	O-ring	2
11.	301656	end cover	2
12.	G000G30	O-ring	2
13.	301657	Cyliner clamper	2
14.	301652	Piston rod	2
15.	301651	Cylinder	1
16.	GUORE25	U-packing	2
17.	301658	Piston	1
18.	WPR0632	Spring pin	2
19.	G000P11	O-ring	2
20.	G10605C	Socket head cap screw	4
21.	F10418C	Socket head cap screw	8
22.	F10616C	Socket head cap screw	4

VALVE (KGS-306H)



VALVE (KGS-306H)

Index No.	Parts No.	Parts Name	Q'ty
1.	251646	Flow control lever	1
2.	251644	Flow control knob	1
3.	GS177SC	Oil seal	2
4.	301631	Upper cover	2
5.	G000P22	O-ring	2
6.	G000P11	O-ring	1
7.	301632	Flow control shaft	1
8.	301630	Control valve body	1
9.	G000P22	O-ring	1
10.	301633	Botton cover	1
11.	F10304C	Socket head cap screw	4
12.	G000P16	O-ring	2
13.	301639	Side cover	2
14.	301636	Side cover	2
15.	301640	Adjusting shaft	2
16.	G000P16	O-ring	2
17.	301635	Pilot piston	1
18.	F10304C	Socket head cap screw	2
19.	301637	Adjsuting shaft	1
20.	301692	Botton cover	1
21.	301634	Direction control shaft	1
22.	251641	Direction control arm	1
23.	F10404C	Socket head cap screw	1
24.	WLK3205	Dog handle	2
25.	301674	Dog	1
26.	911402	Nut	2
27.	301675	Dog	1
28.	G0000P9	O-ring	3
29.	301638	Adjusting screw	3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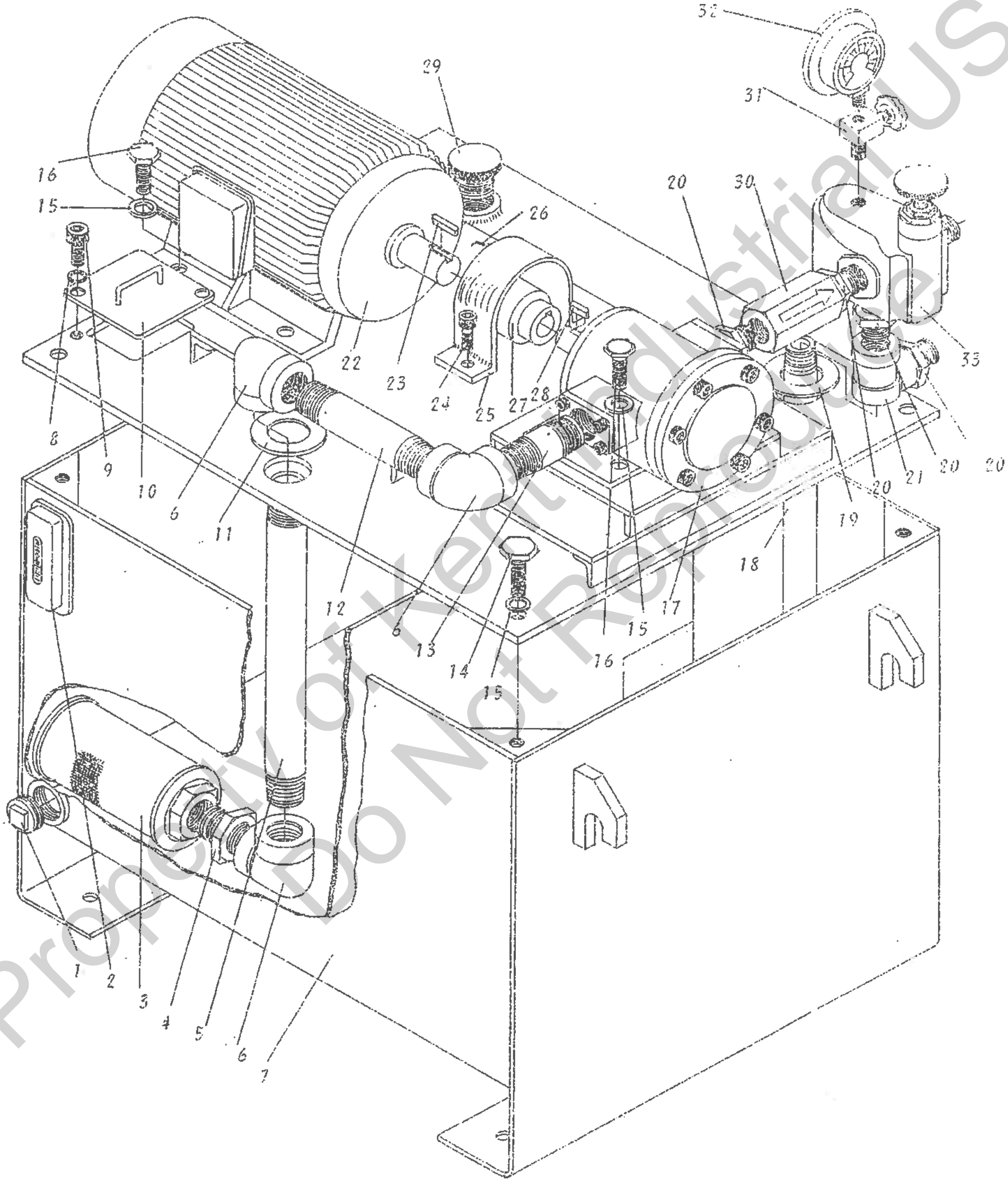
VALVE (KGS-306AH, AHD)

Index No.	Parts No.	Parts Name	Q'ty
1.	251645	Fiwo control lever	1
2.	251644	Fiwo control knob	1
3.	GS177SC	Oil seal	3
4.	301631	Upper cover	3
5.	G000P22	O-ring	4
6.	G000P11	O-ring	2
7.	301693	Flow control shaft	1
8.	301690	Control valve body	1
9.	301633	Botton cover	1
10.	F10304C	Socket head cap screw	4
11.	301636	Side cover	2
12.	301640	Adjsuting shaft	2
13.	G000P11	O-ring	2
14.	G000P16	O-ring	2
15.	301635	Pilot piston	1
16.	F10304C	Socket head cap screw	8
17.	301646	Cam	2
18.	301634	Direction control shaft	1
19.	251641	Direction control arm	1
20.	F10404C	Socket head cap screw	1
21.	WLK3205	Dog handle	2
22.	301647	Dog	1
23.	911402	Nut	2
24.	301675	Dog	1
25.	E31151	Limit switch	2
26.	G0000P9	O-ring	3
27.	301638	Adjsuting screw	3

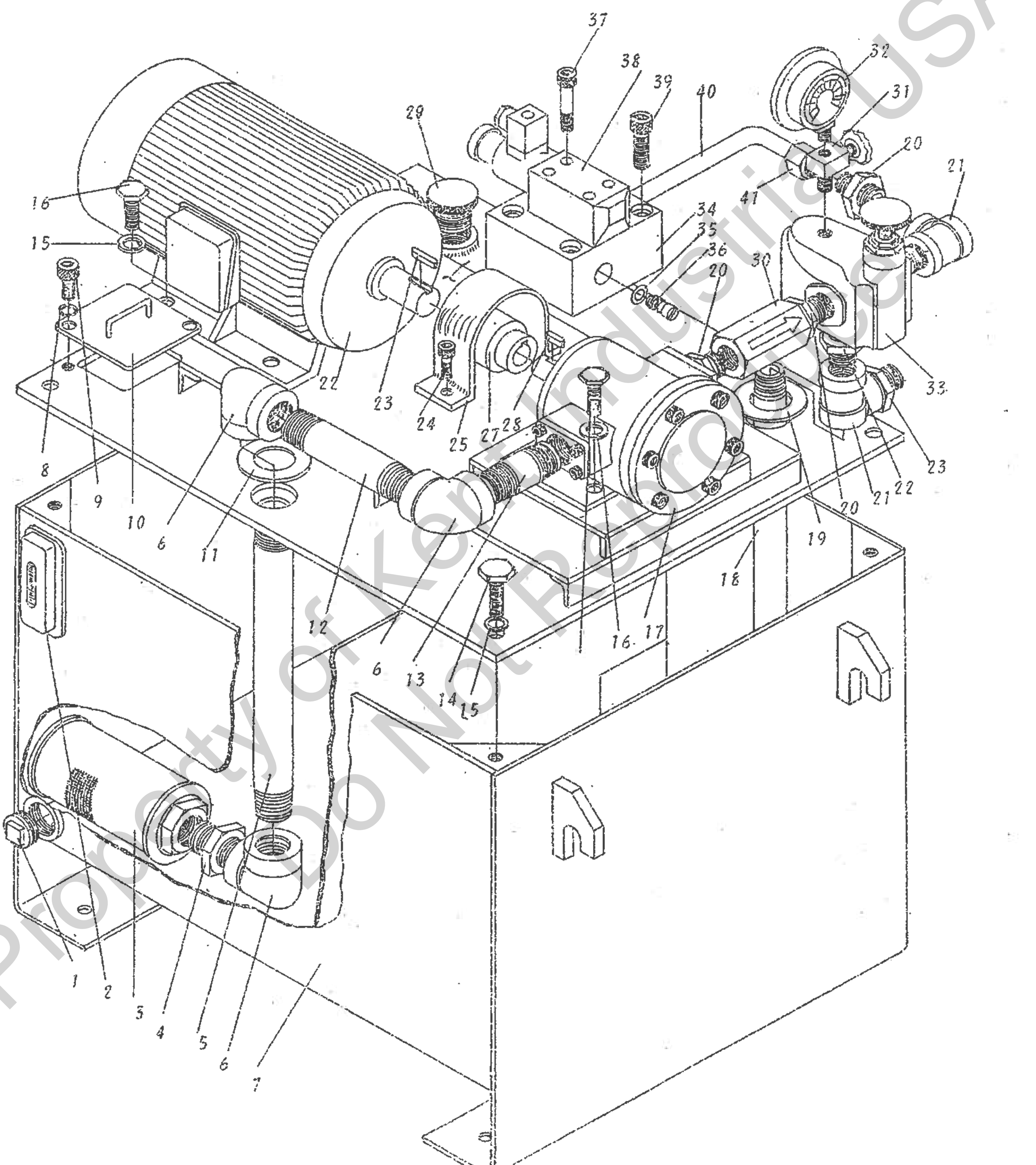
HYDRAULIC TANK (KGS-306H, AH)



HYDRAULIC TANK (KGS-306H, AH)

Index No.	Parts No.	Parts Name	Q'ty
1.	HL00008	Plug	1
2.	GA00001	Oil Gauge and thermometer	1
3.	HZ00008	Oil filter	1
4.	HN00808	Nipple	1
5.	301607	Hydraulic pipe	1
6.	HELF008	Elbow	3
7.	301601	Hydraulic tank	1
8.	WWS0004	Spring washer	2
9.	F10404C	Socket head cap screw	2
10.	301618	Cover	1
11.	411612	Washer	1
12.	301605	Hydraulic pipe	1
13.	301603	Hydraulic pipe	1
14.	F30614C	Hexagonal screw	4
15.	WWS0008	Spring washer	12
16.	F30610C	Hexagonal screw	4
17.	HPLC17R	Pump	1
18.	301603	Hydraulic pipe	1
19.	411611	Washer	1
20.	HN00606	Nipple	4
21.	HT00006	Tee joint	1
22.	MH00262	Motor (Hydraulic motor)	1
23.	WDK7735	Key	1
24.	F10404C	Socket head cap screw	2
25.	411610	Pretective plate	1
26.	411602	Chain coupling	1
27.	301602	Chain coupling	1
28.	WDK5525	Key	1
29.	921503	Oilinlet cap	1
30.	HC00006	Check valve	1
31.	HS00302	Gauge valve	1
32.	HG26070	Presure gauge	1
33.	HR00006	Relief valve	1

HYDRAULIC TANK (KGS-306AHD)



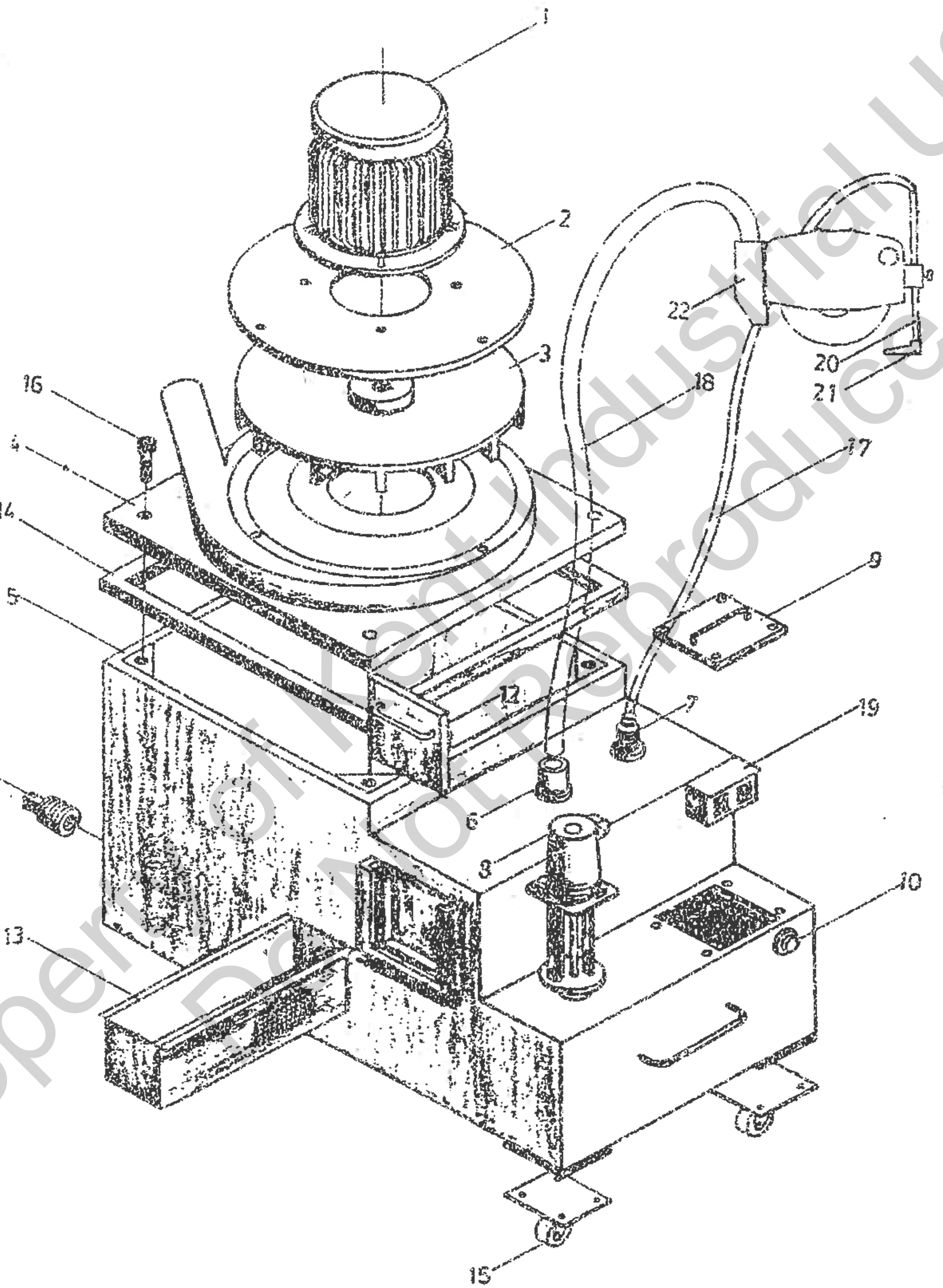
HYDRAULIC TANK (KGS-306AHD)

Index No.	Parts No.	Parts Name	Q'ty
1.	HL00008	Plug	1
2.	GA00001	Oil gauge and thermometer	1
3.	HZ00008	Oil filter	1
4.	HN00808	Nipple	1
5.	301607	Hydraulic pipe	1
6.	HELF008	Elbow	3
7.	301601	Hydraulic tank	1
8.	WWS0004	Spring washer	2
9.	F10404C	Scoket head cap screw	2
10.	301618	Cover	1
11.	411612	Washer	1
12.	301605	Hydraulic pipe	1
13.	301603	Hydraulic pipe	1
14.	F30614C	Hexagonal screw	4
15.	WWS0008	Spring whaher	12
16.	F30610C	Hexagonal screw	4
17.	HPLC17R	Pump	1
18.	301606	Hydraulic pipe	1
19.	411611	Washer	1
20.	HN00606	Nipple	5
21.	HT00006	Tee joint	2
22.	MH00262	Motor	1
23.	WDK7735	Key	1
24.	F10404C	Socket head cap screw	2
25.	411610	Protective plate	1
26.	411602	Chain coupling	1
27.	301602	Chain coupling	1
28.	WDK5525	Key	1
29.	921503	Oil inlet cap	1
30.	HC00006	Check valve	1
31.	HS00302	Gauge valve	1
32.	HG26070	Presure gauge	1
33.	HR00006	Relief valve	1
34.	411850	Fixed body	1
35.	G0000P9	O-ring	1
36.	461618	Adjusting screw	1
37.	F10509P	Socket head cap screw	4
38.	HDA002	Direciton control valve	1

HYDRAULIC TANK (KGS-306AHD)

Index No.	Parts No.	Parts Name	Q'ty
39.	F10512C	Socket head cap screw	4
40.	HH03035	Brass pipe	1
41.	HACN2T2	Brass connector	2

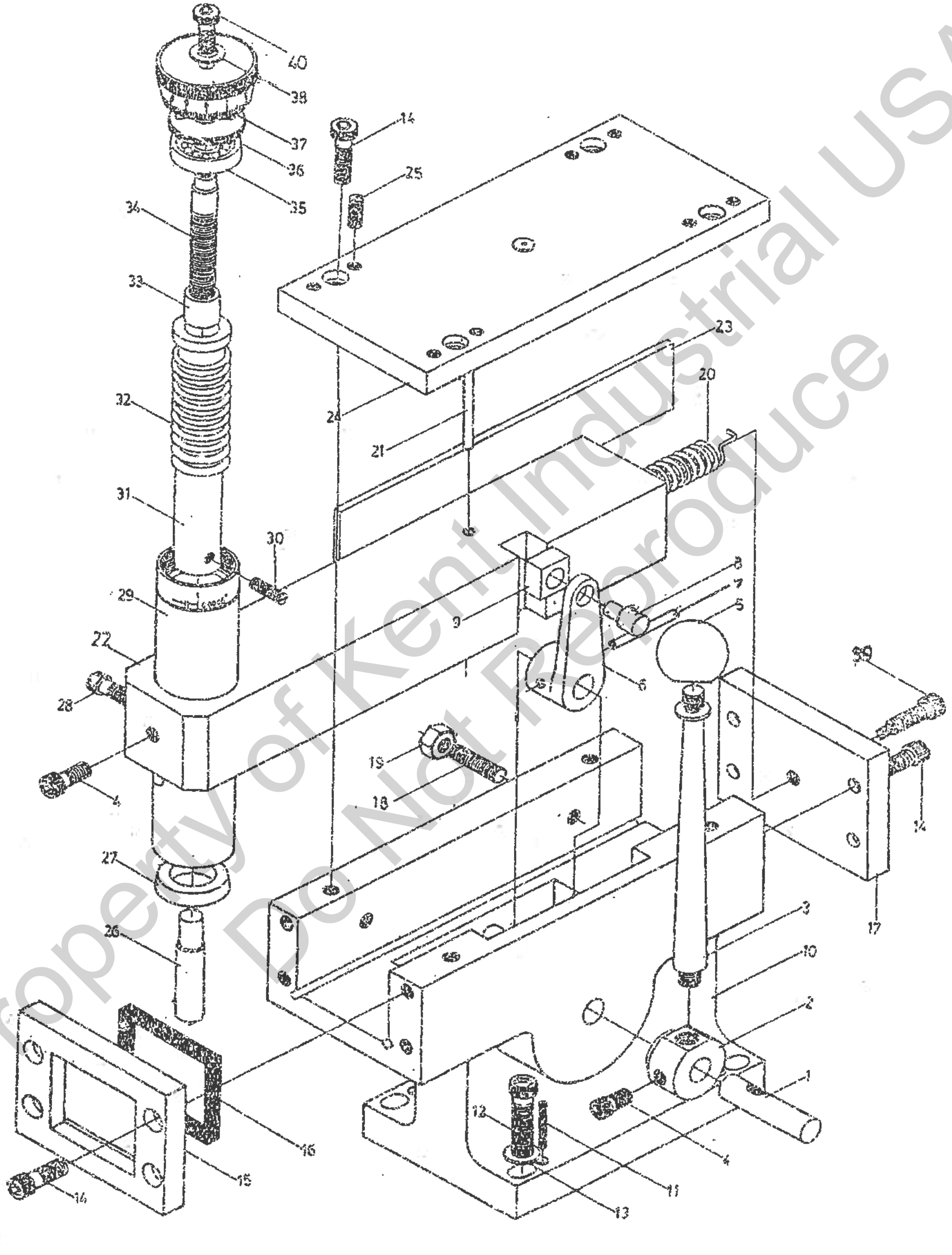
DUST-SUCTION COOLING SYSTEM (Optional Accessory)



DUST-SUCTION COOLING SYSTEM (Optional Accessory)

Index No.	Parts No.	Parts Name	Q'ty
1.	MVB1322	Motor	1
2.	921408	Motor Fixed Plate	1
3.	921407	Suction Fan	1
4.	921404	Upper Cover	1
5.	921401	Tank	1
6.	921409	Suction Hose Connector	1
7.	921421	Coolant Hose Connector	1
8.	MVB1322	Coolant Pump	1
9.	921404	Cover	1
10.	GM00006	Coolant Indicator	1
11.	HL00004	Plug	1
12.	921403	Filter Cover	1
13.	921402	Filter	1
14.	921405	Cover Packing	1
15.	JA00003	Roller Bracket	4
16.	F30610C	Hexagonal Head Screw	4
17.	VA04010	Coolant Hose	1
18.	VB21020	Suction Hose	1
19.	ES9600	On-Off Switch	1
20.	921424	Coolant Pipe	1
21.	921425	Coolant Nozzle	1
22.	921422	Dust-Collector	1

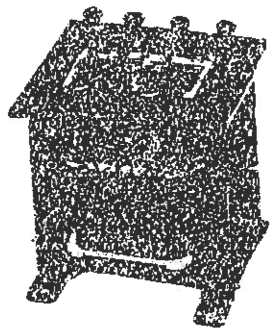
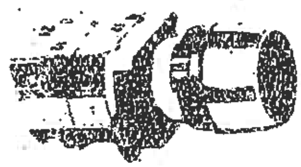
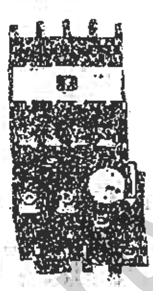
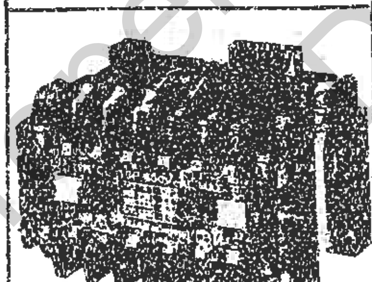
PARALLEL DRESSER (Optional Accessory)

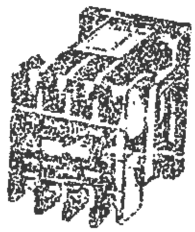
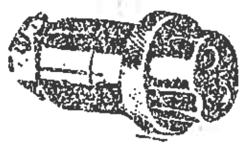
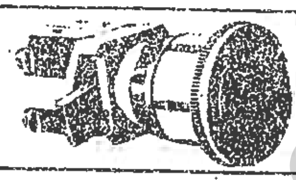
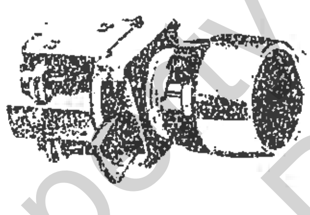
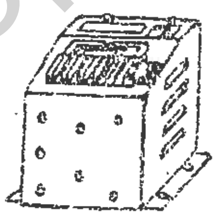


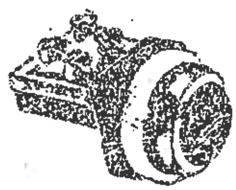
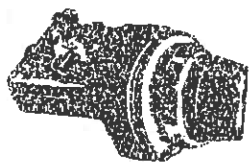
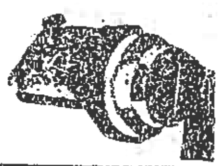
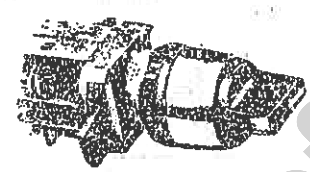
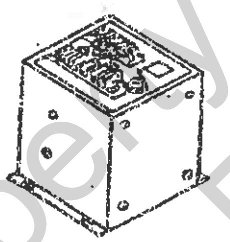
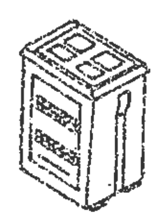
PARALLEL DRESSER (Optional Accessory)

Index No.	Parts No.	Parts Name	Q'ty
1.	921444	Lever Shaft	1
2.	921445	Shaft Bushing	1
3.	921111	Lever	1
4.	F10404C	Socket Head Cap Screw	2
5.	921110	Knob	1
6.	921446	Arm	1
7.	WPR0422	Pin	1
8.	921447	Pin Shaft	1
9.	921448	Slide Block	1
10.	921449	Parallel Dresser Base	1
11.	F20403C	Set Screw	2
12.	F10407C	Socket Head Cap Screw	4
13.	WWF0004	Washer	4
14.	F10304C	Socket Head Cap Screw	12
15.	921450	Front Cover	1
16.	921451	Oil-Immersed Pad	1
17.	921452	Rear Cover	1
18.	F20404C	Set Screw	3
19.	WNH0004	Nut	3
20.	921453	Spring	1
21.	WPR0524	Pin	1
22.	921454	Slider	1
23.	921455	gib	1
24.	921442	Upper Cover	1
25.	F10403C	Socket Head Cap Screw	8
26.	911108	Diamond Tip	1
27.	GU0RE20	U-Packing	1
28.	F20304C	Socket Head Cap Screw	1
29.	921112	Adapter	1
30.	921120	Set Screw	1
31.	921113	Diamond Tip Holder	1
32.	921119	Spring	1
33.	921114	Copper Bush	1
34.	921117	Leadscrew	1
35.	B620000	Bearing	1
36.	921115	Cover	1
37.	921116/	Graduation Dial	1
38.	921118	Washer	1
39.	921143	Spring Fix Screw	1
40.	F10204C	Socket Head Cap Screw	1

O). Electrical Parts List.

Contour	Parts No.	Specification	Code No.
	EF2401 Transformer	440-380-220-0 200-100-0-12-24	AH:Tr. AHD:Tr.
	EL5245	22Ø 24V Green	AHD:PB8, PB11
	EL7249	30Ø 24V Green	AH:PB8, GL
	EM2241	HO-11ERH10/1.7 24V	AH:MC5 AHD:MC5
	EM2244	HO-11ERH10/4 24V	AH:MC2 AHD:MC2
	EM2247	HO-11GRH10/7 24V	AH:MC1 AHD:MC1
	EM3241	CL-4E 24V	AH:MC3 AHD:MC3, MC4
	ES1012	30Ø Red	AH:PB1

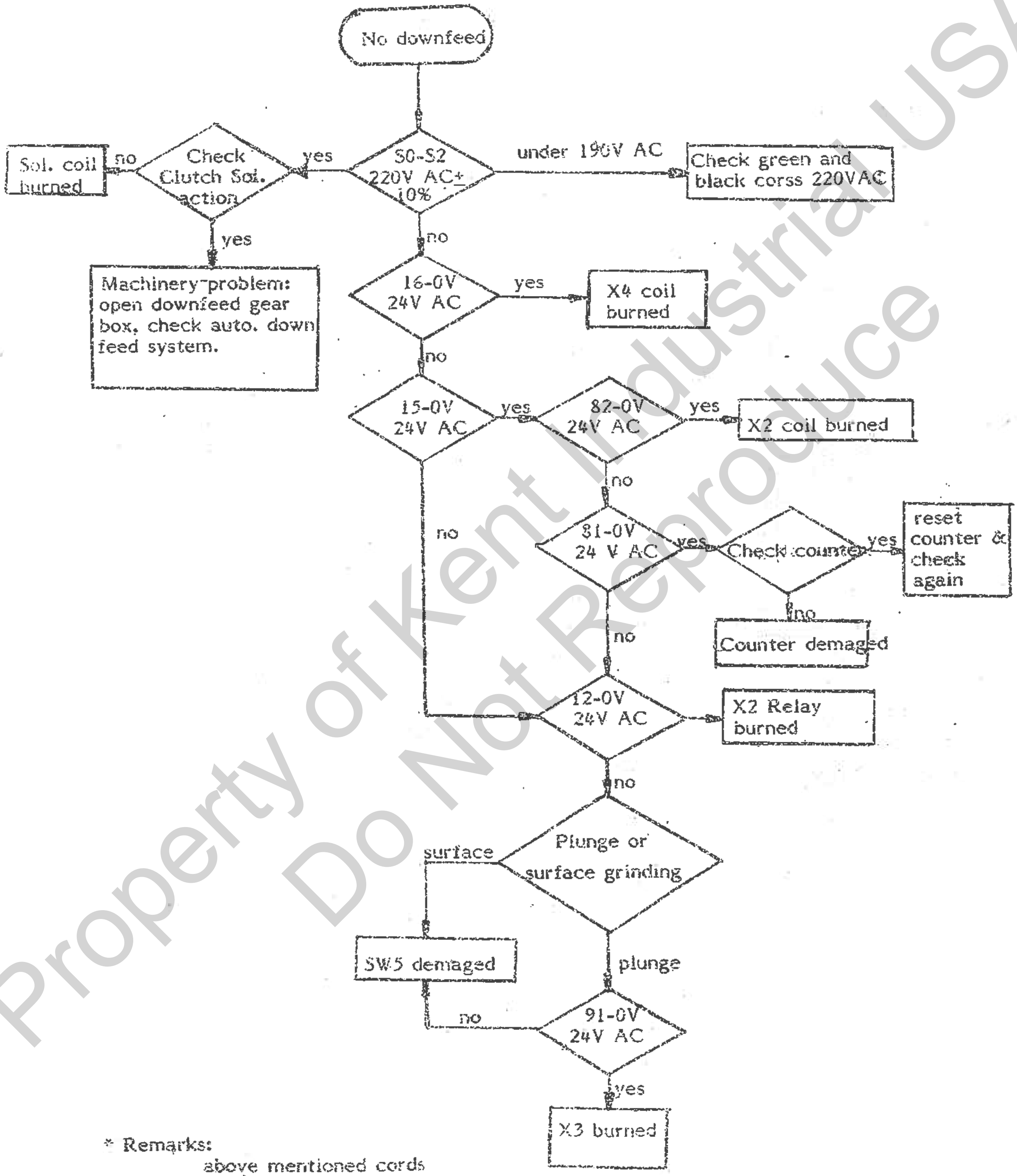
Contour	Parts No.	Specification	Code No.
	EM1241	C-11E 24V 4a	AH:MO AHD:MO
	EM5242	2P 24V	AHD:X3
	EM5244	4P 24V	AHD:X4, X1, X2
	EN503$_{1}^{0}$	HRS-21-3P	AHD:SO04
	EN504$_{1}^{0}$	HRS-21-4P	AH:SO02, SO03 AHD:SO02, SO03
	ES0512	22Ø Red	AHD:PB1
	ES2512	22Ø Green	AHD:PB2, PB4, PB6
	ES2600	22Ø Black	AHD: PB9, PB10, PB12 PB13
	ES2605	22Ø Green	AHD:PB3, PB5, PB7
	EU0001	Solid state control unit	AH:S.S.C.U. AHD:S.S.C.U.

Contour	Parts No.	Specification	Code No.
	ES3012	30∅ Red	AH:PB2,PB4,PB6
	ES3100	30∅ Black	AH:PB9,PB10
	ES3105	30∅ Green	AH:PB3,PB5,PB7
	ES5112	30∅ Black 2-POSITION	AH:SW4
	ES7113	30∅ Black 3-POSITION	AH:SW3
	ES4612	22∅ 2-POSITION	AHD:SW4
	ES4613	22∅ 3-POSITION	AHD:SW3
	ES4723	22∅ 3-POSITION	AHD:SW5
	EU0003	Chuck control box	AH:C.C.B. AHD:C.C.B.
	EU0004	Delay timer unit	AHD:D.T.U.
	EU1004	COUNTER	AHD:Counter

P). Trouble Shooring.

* AUTO. DOWNFEED OUT OF ORDER

Please check as following procedure:



* Remarks:

above mentioned cords number and limit switch number, please refer to circuit diagram.