Operation Manual

For

KRGH-400

The Precision Surface Grinding Machine

Version: 2025/10

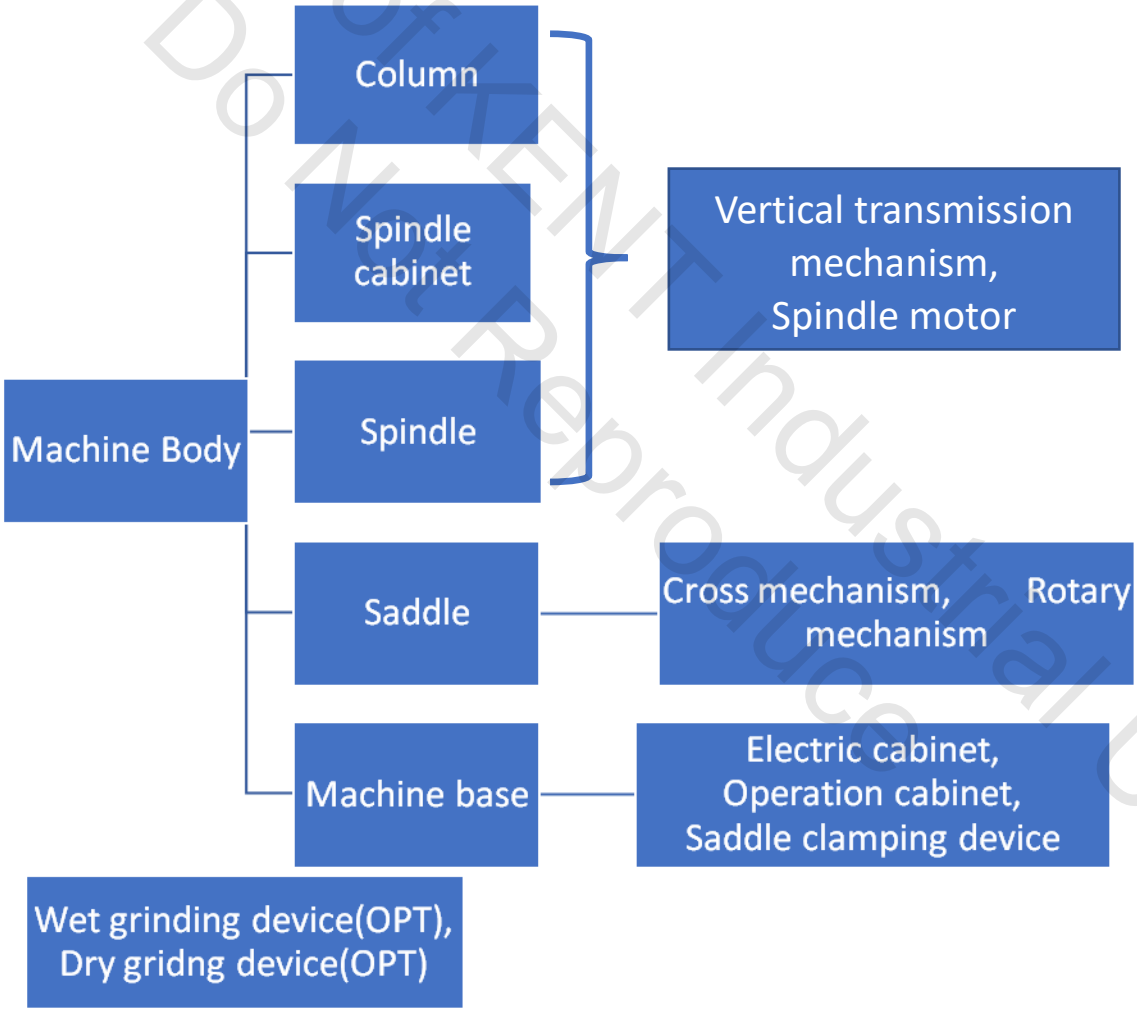
CONTENT

1 General Description

1.1 Construction

KRGH-400 is CNC precision rotary table surface grinder with 3 axes driven by AC servo motor. Features of the machine are simple constructed, easy to operate, and high accuracy.

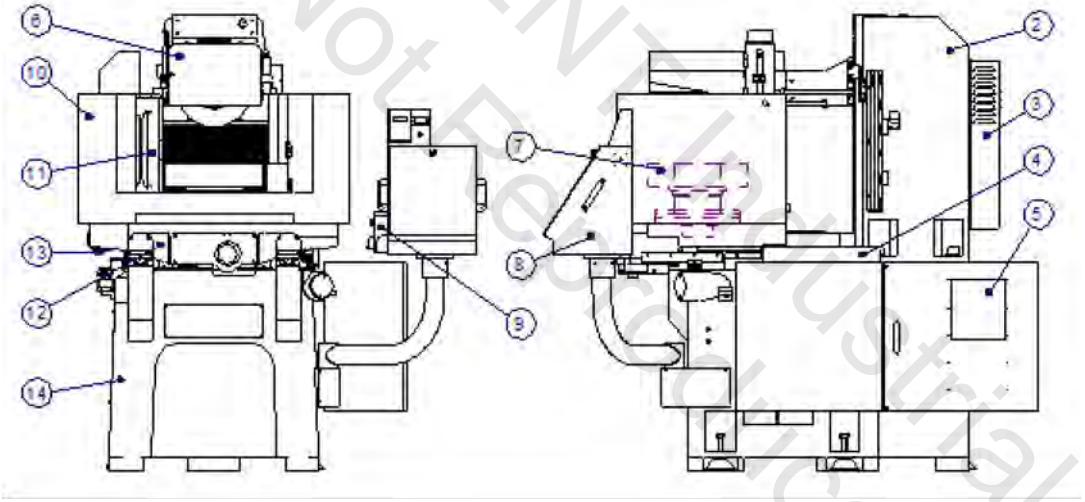
The construction of the machine



1.1.1Front view and side view

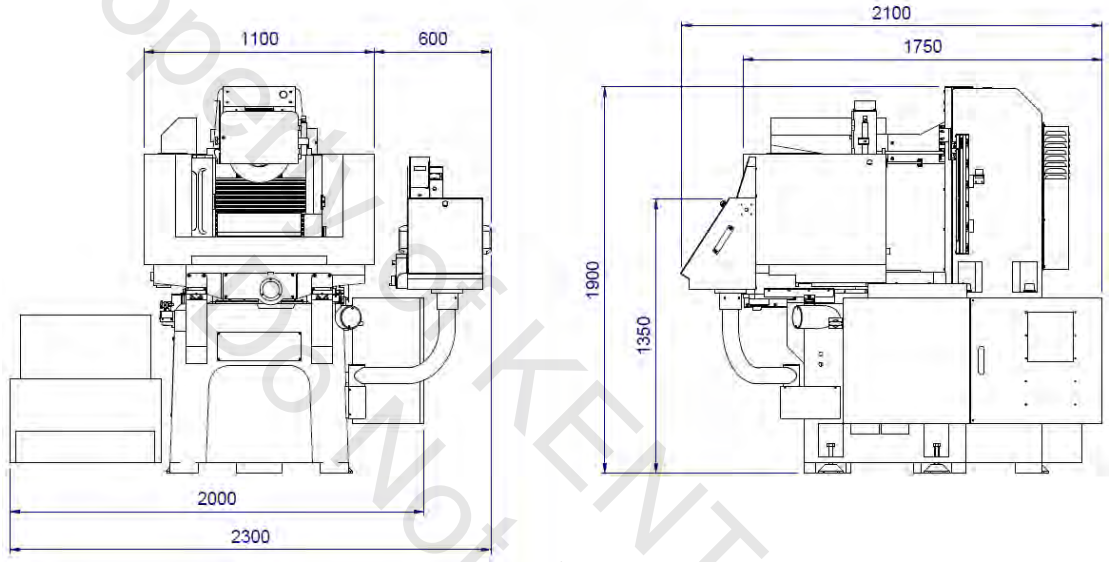
1	Top cover	7	Rotary table	13	Coolant drain
2	Column	8	Operation Cabinet	14	Machine base
3	Rear cover	9	MPG		
4	Cross axis DRO(OPT)	10	Splash guard		
5	Electrical cabinet	11	Slide door		
6	Wheel guard	12	Saddle		

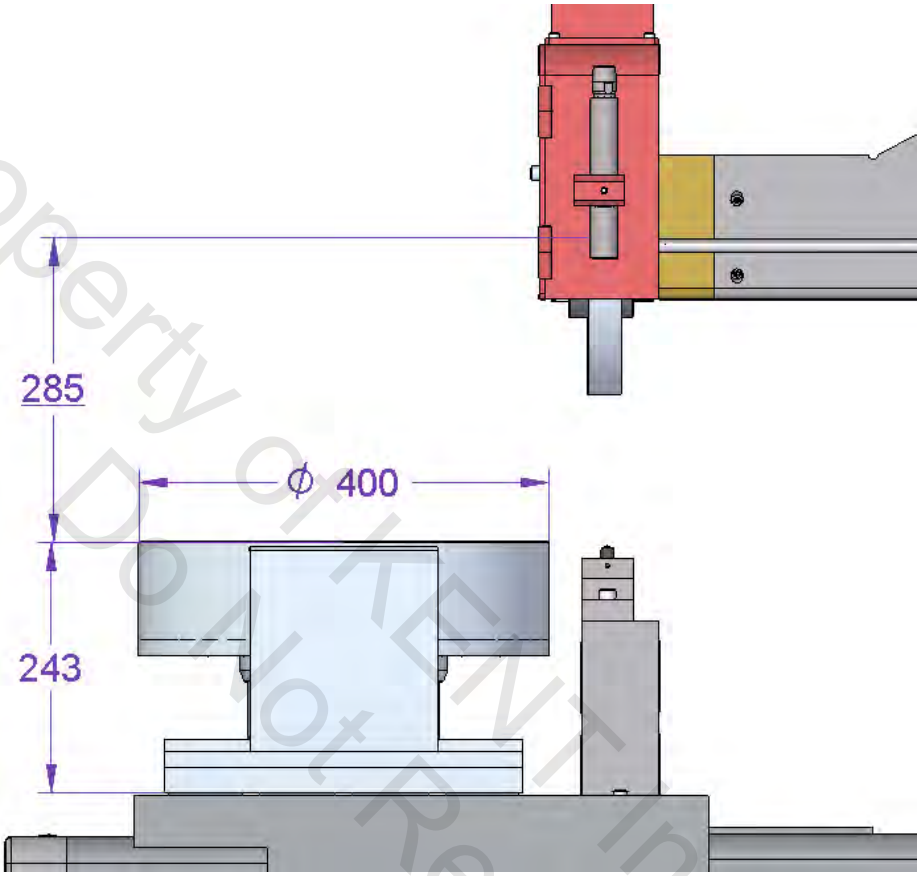
KRGH-400



1.1.2 Working range and external

KRGH-400





1.2 Specification

	ITEM		UNIT	KRGH-400
CAPACITY	Rotary table diameter		mm	Ø 400
	Maximum distance from table top to spindle center line		mm	280
	Maximum Cross (Z-axis) travel		mm	285
	Table rotating speed		rpm	15~200
	Auto down feed setting (One/ Two side feed)		mm	0.001~0.999
SPINDLE	Grinding wheel (DiaxThickness xBore)50Hz		mm	355x32x127
	Grinding wheel (DiaxThickness xBore)60Hz		mm	305x32x127
	Spindle speed (50/60Hz)		rpm	1430/1735
	Spindle motor		HP	3
MOTOR	Rotary table servo motor		W	900
	Vertical servo motor		W	400
	Cross servo motor		W	400
VERTICAL FEED (Y-axis)	Vertical rapid feed 100%		mm/min	240
	Vertical slow feed 10%		mm/min	24
	MPG	Per revolution (x1 x10 x100)	mm	0.1，1，10
		Per graduation (x1 x10 x100)	mm	0.001，0.01，0.1
CROSS FEED (Z-xis)	Cross rapid feed100%		mm/min	1200
	Crossslow feed10%		mm/min	120
	MPG	Per revolution (x1 x10 x100)	mm	0.1，1，10
		Per graduation (x1 x10 x100	mm	0.001，0.01，0.1
DIMENTION & WEIGHT	Weight (approx)		kg	1800
	Packing dimensions(LxW xH)		mm	2270x1700x2130

※The above specifications subject to change without prior notice.

1.3 Standard Accessories

Description	Qty	Remark
1. Grinding wheel (Dia×Thickness × Bore)	1	
Ø355×32×Ø 127m/m (KRGH-400 50Hz)·····		
Ø305×32×Ø 127m/m (KRGH-400 60Hz)·····		
2. Grinding wheel flange and puller·····	1each	
3. Arbor and nut for wheel balancing ·····	1 each	
4. Dimond tool (1/4Carat) with a base·····	1 each	
5. Dust sweeping squeegee·····	1	
6. Working lamp ·····	1	
7.Leveling plates, ·····	5	
8. Leveling bolts and nuts·····	5 Sets	
9. Eyebolt ·····	3 pcs	
10.T-Nut and screws ·····	2 sets	
11.Necessary tool with a tool box：		
A. Wrench(36m/m) ·····	1	
B. Allen key wrench (2.5，3，4，5，6，8m/m)	1 each	
C. Adjustable wrench (375m/m) ·····	1	
D. Cross screw driver (#4) ·····	1	
11. Lubrication oil (4liters) ·····	2	
12. Operation manual and inspection certificate·····	1 each	
13. Touch up paint ·····	1	
14. Hook ·····	1	

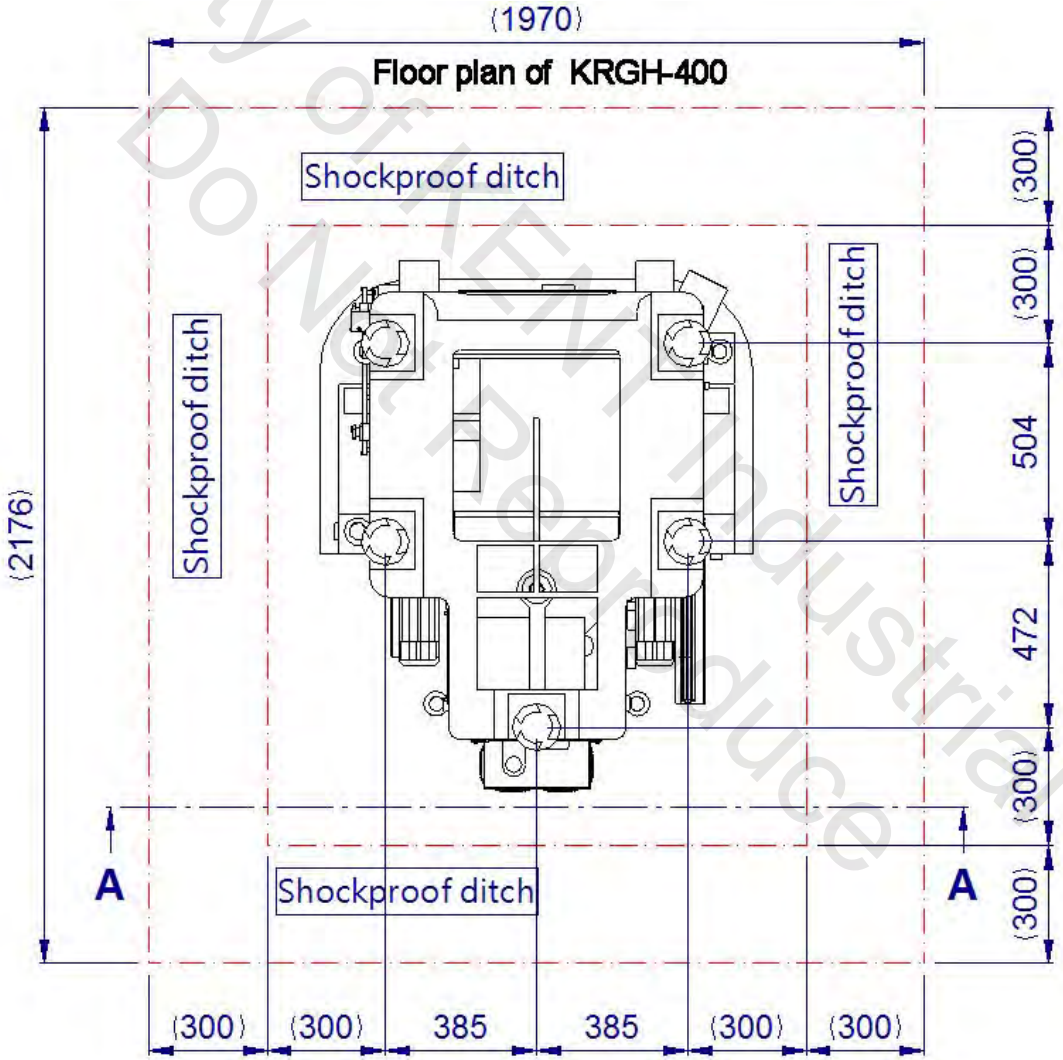
1.4 Optional Accessories

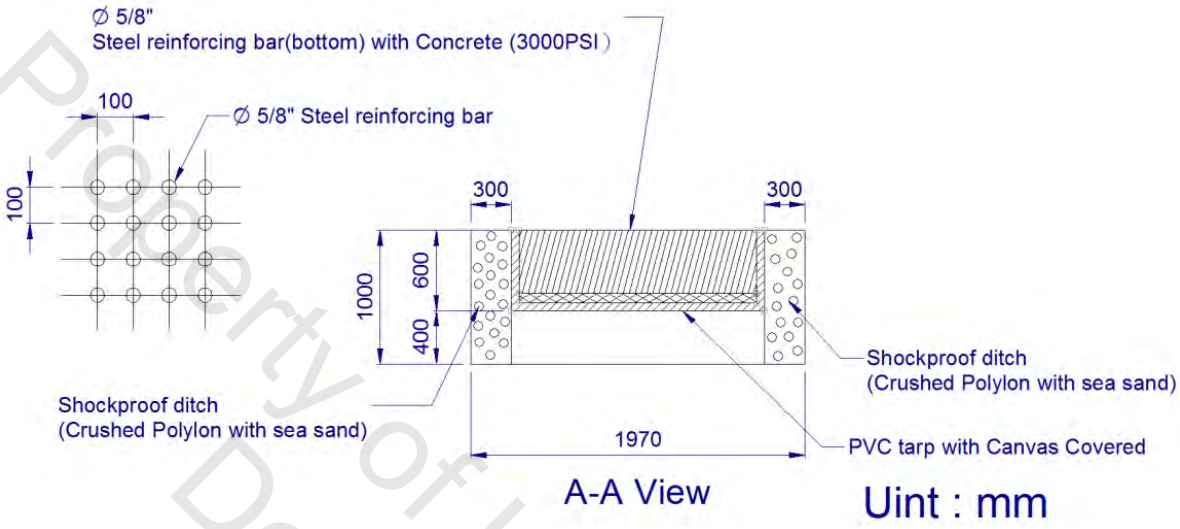
1. C01：Spindle inverter
2. D02：Digital readout (with compensation function)
3. E06：Coolant system with paper filter
4. E07：Coolant system with paper filter and c/w a magnetic dust separator
5. I11：Cutting fluid cooler
6. N01：Dynamic balancer for grinding wheel
7. R02：Spare grinding wheel adaptor

2 Installation

2.1 Floor plan of machines

Floor plan of KRGH-400





2.2 Transportation

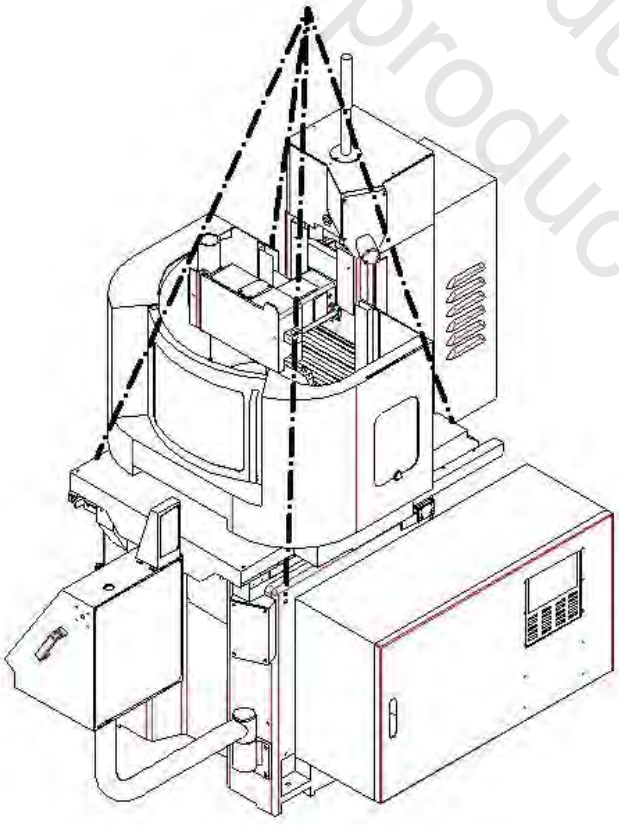
When transporting the machine, care should be taken, so that any shock will not be given to the machine in the transportation. The machine has to be lifted by a crane or forklift which can bear the weight of the machine. The machine cannot be exposed to sunlight for a long period, as it will affect the precision of the machine.

When the goods are carried to customers end, go over the checklist ensuring every item/ accessory is well received. Reach the supplier in case of any shortage ofitem/ accessory.

Weight of KRGH-400 is approximately 1800Kg.

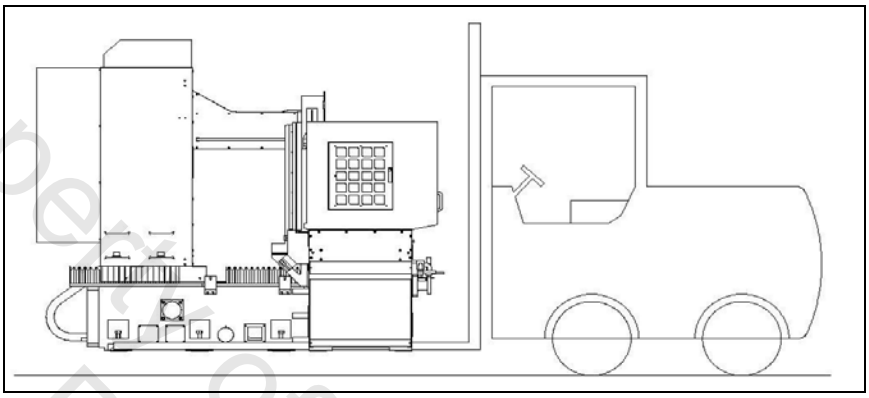
2.2.1 Use crane to lift & carry the machine:

When using crane to unload the machine, please use wire rope (Ø10 mm or above) to pass through the hanging rings on the machine. Using forklift is also suggested to unload the machine. Attention should be paid to center of gravity in case of machine tilting or machine falling.



2.2.2 Use forklift to lift and carry the machine:

In order to make sure the stability, please use a pallet to lift and carry the machine by forklift.



※ Remark

(1) The center of gravity is on the column. When lifting the machine by crane or forklift, please take special care on the balance.

(2) Before dismantling the wooden box, the machine can only be lifted by forklift.

(3) When dispatching the machine, the movement mechanisms are all fixed to prevent from damage. Only when the machine is delivered on user side and positioned, the fixed devices can be dismantled accordingly.

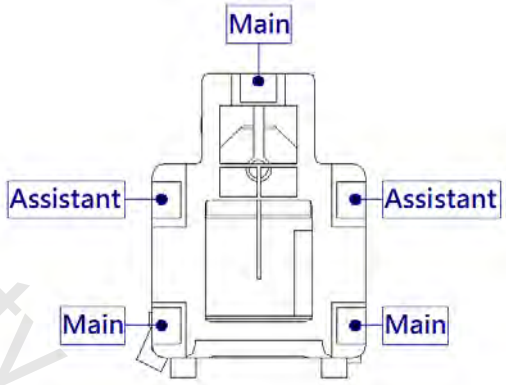
2.3 Cleaning

Use light-oil immersed soft clothto remove rust-preventive oil applied on the machine. Avoid a use of gasoline or thinner.

2.4 Positioning

1. Avoid places where there is much vibration or the machine might be exposed directly to the sun.
2. In case installation inevitably be made around a place where there are presses or sharpers which become the origin of vibration, vibration-proof foundation work must be done.
3. Avoid of machine installation around EDM machines.
4. Please put plates on a plate to be mounted. Then, place the machine on them so that each of the leveling bolts of the machine will be placed in conformity with each of those plates.

2.5 Horizontal Adjustment



KRGH-400

1. Put the plates on a place to be mounted. Then, place the machine on them so that each of the leveling bolts of the machine will be placed in conformity with each of those plates.
2. Place the precision level (sensitivity-one graduation 0.04 mm/M) on the surface of the table (or chuck). Make its adjustment within 0.04 mm/M for both the longitudinal and cross direction.
3. Choose one leveling bolt as the main bolt and get the torque value by torque wrench, apply this value to all other leveling bolts, to make all torque value of the bolts are the same, if any bolts already locked too tight, please loosen first then lock.
4. If the bolts getting loosen while locking, lower the torque value, lower to 60% of torque value then lock assistant screw up one by one.

※Note

1. while the practice of horizontal adjustment is in process, its sensitivity must be within 0.02 mm/M.
2. Place the precision level on the surface of the table (or chuck). Make its adjustment within 0.04 mm/M for both the longitudinal and cross direction.
3. Examine if the leveling bolts touch the ground completely after adjustment.
4. The machine’ s level should be checked every week till its stability. When the machine ’ s level is stable, it also needs to be checked one time monthly.

2.6 Power Sources Wiring

1. Power wiring is located on the rear part of electric cabinet. Make sure the power grounding is done to prevent wrong motion caused by noise. Before connection, make sure if the voltage is correct. Before the first operating of powered machine, please confirm the running direction of spindle motor without wheel loaded.

Caution: Never switch power on before hydraulic lubrication bump oiling.

2. The direction of spindle motor's must be clockwise, viewing from the front of the machine. If not, one phase of the power supply connection must be changed over.
3. Make sure rotary table is running clockwise, if not, one phase of the power supply connection must be changed over.

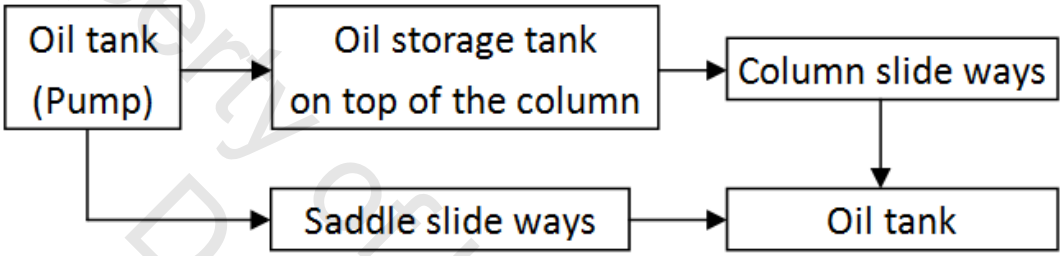
※Note

1. Do not change the wire connection inside the electric box
2. Avoid of the spindle running counterclockwise.
3. Unless the oil pressure tank is oiling, do not start the oil pump.

3 Oiling and Lubrication

3.1 Lubrication system

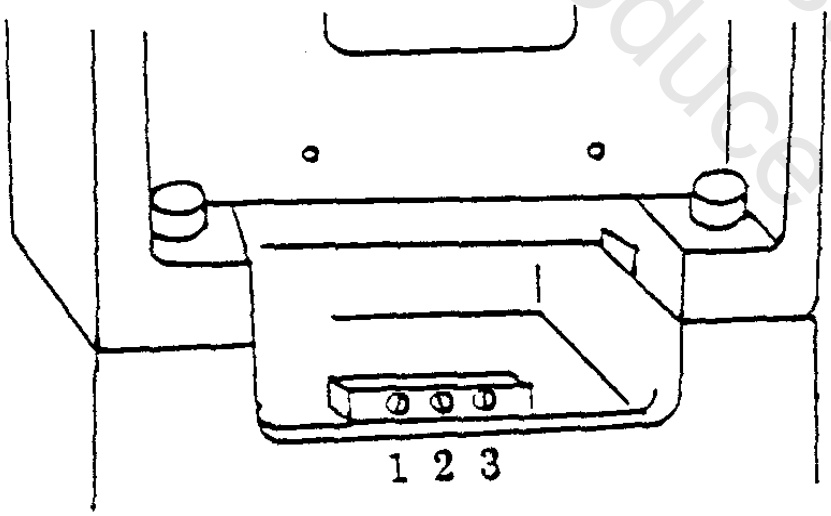
This machine uses a fully automatic lubrication system. When the machine is on, oiling to every part will be accomplished through the lubricating pump.

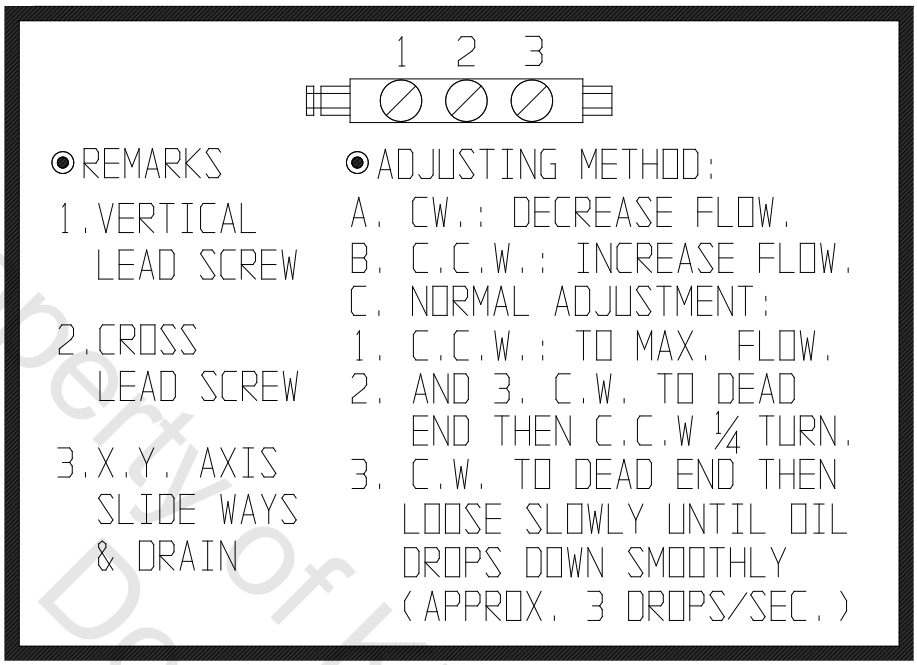


Lubricating Oil

Service Point	Amount	Oil Specification	Remarks
Lubricating pump	2litres	Mobil 1405	Replenish in every 3~6 months

3.2 Operation of lubrication pump





3.3 Caution of oiling

（1） Remove the cover on the lower part of the column and make an oiling into the oil tank. The capacity of the tank is approx. 2 liters.

（2） The lubrication pump operates as the source is put “ON”, it be sure that the inspection window on the upper part of the front of the column.

（3） If the pump idle, easily malfunction, please note that in the pump oil, lubricating oil filter was maintained at all times under the oil surface. Avoid inhalation of air, could easily lead to pump damage.

（4） Flow rate of the lubrication unit is varied on the lubrication distributor.
Clockwise: flow rate to be slower, weaker
Counterclockwise: flow rate to be faster, stronger

（5） If the machine is not used for a period of time to stop, you must let it run for a while at boot time, so that lubricating oil into each screw, otherwise the hand wheel operation, there will be a little different tone.

⁂ Reminder：

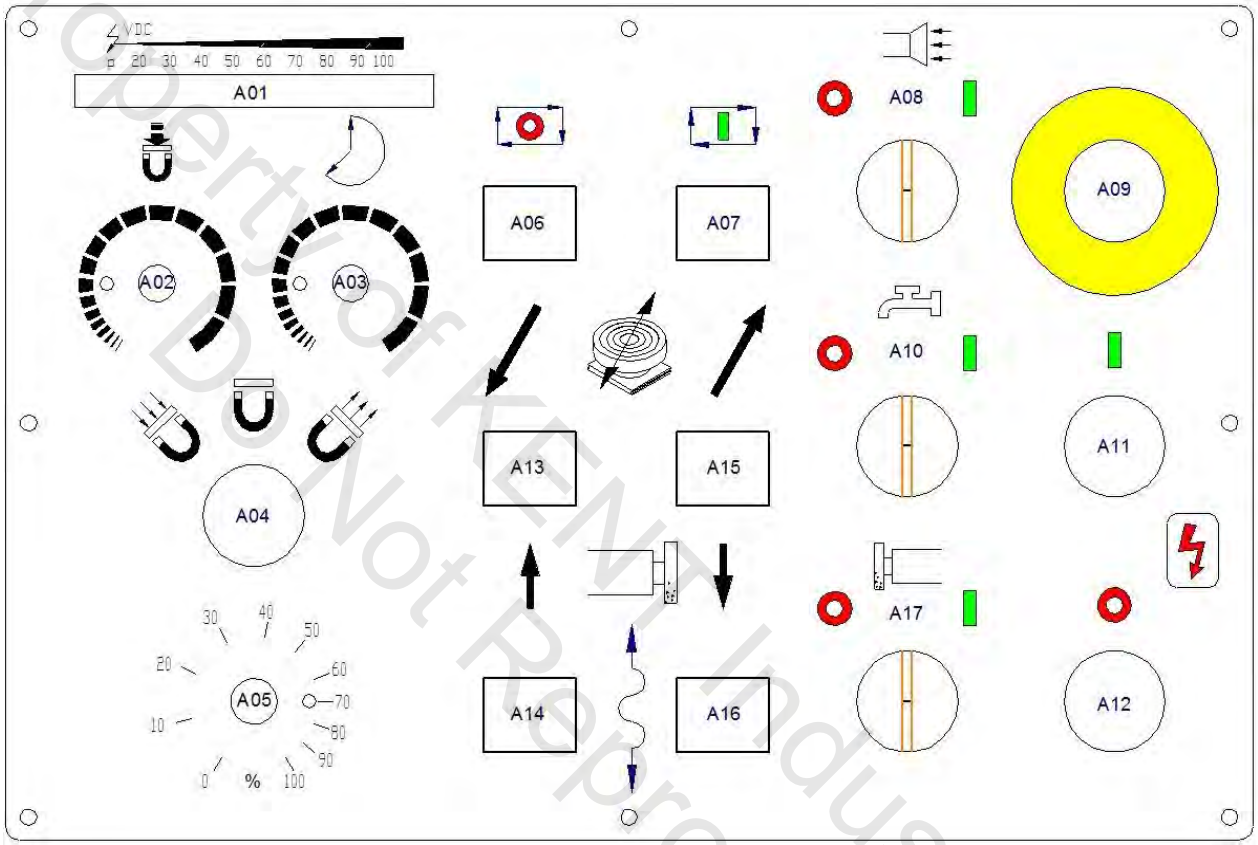
(1) It is strongly recommended tochange lubricating oil after first month operation and three to six months after for the next, respectively.

(2) Proper oil change can keep the original accuracy of machine for long.

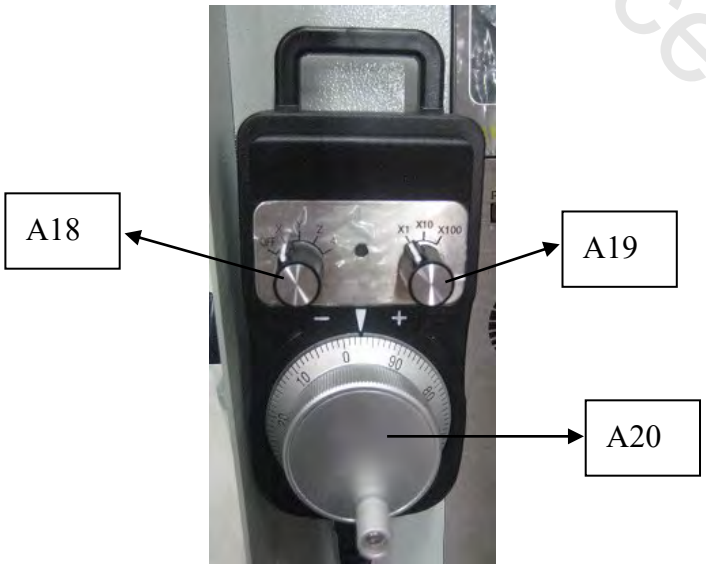
(3) Oil screen clogged causes the oil pump burned can be avoid by change the oil regularly.

4 Operation Instruction

4.1 Control panel



4.1.1MPG



4.1.1.1 Operation of MPG

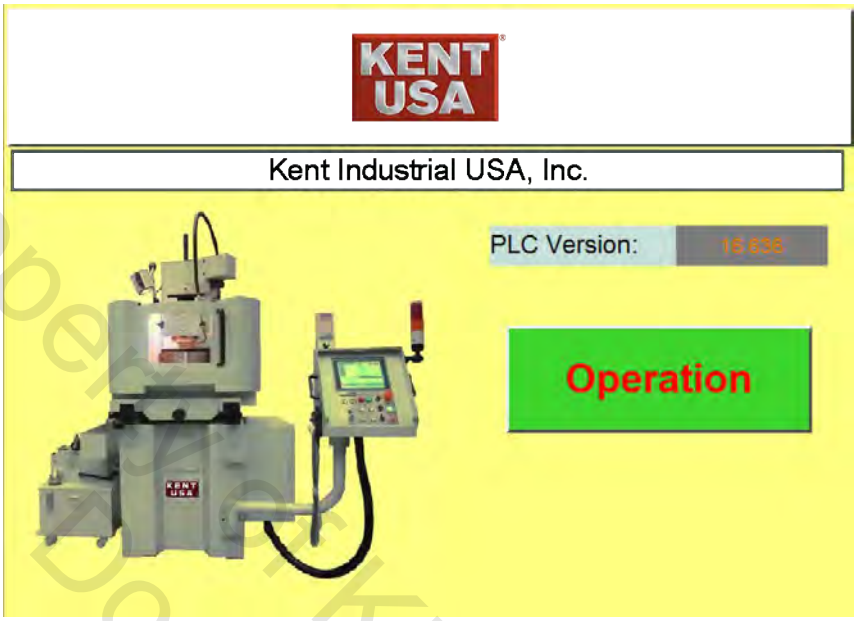
1. Vertical feed MPG：C.W.: Wheel spindle up
   C.C.W: Wheel spindle down
2. Cross feed MPG： C.W.: Saddle inward
   C.C.W.: Saddle outward

4.1.2Description of control panel

NO.	SYMBOL	FUNCTION
A01	Display of the magnetic force	(opt.)The higher the number, the stronger themagnetic force.
A02	Magnetic chuck clamping force adjustment	(opt.)C.W.: Increasing clamping force.
A03	Demagnetizing time Adjustment	(opt.)C.W.: Increasing demagnetizing time.
A04	Magnetic chuck controller 	(opt.) Left: Magnetic clamping force is provided. Center: Stops magnetic clamping force. Right: Demagnetization is provided.
A05	Cross / vertical feed	C.W.：Increasing feeding
A06	Cycle stop	Stop the cycle automatic machining and keep current value for unfinished machining, press A07 to continue.
A07	Cycle start	Automatic cycle start.

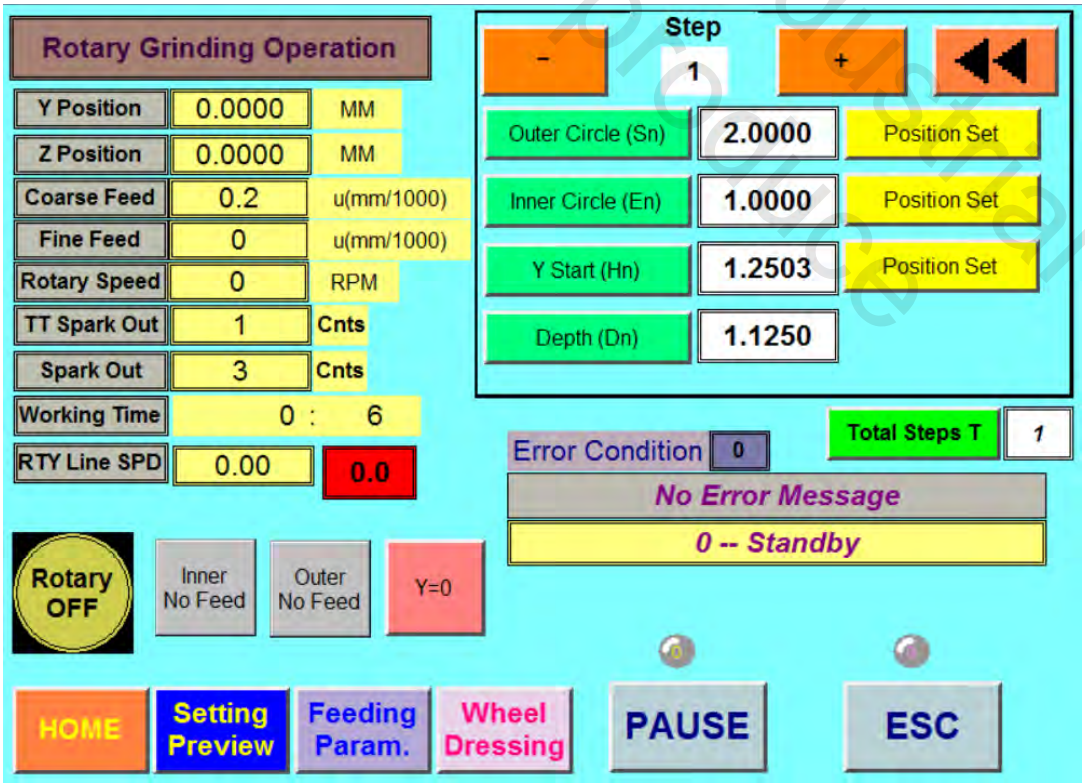
A08	Dust suction automatic switch	Left is off / Right is on
A09	Emergency stop	When this button pressed, motors for all axes stopped. Turn and loosen this button to restart.
A10	Coolant system automatic switch	Left is off / Right is on
A11	Control panel On	Main power on
A12	Control panel Off	Main power off.
A13	Cross feed (outward)	Keep pressing this key to make Cross feed outward until release
A14	vertical feed (Upward)	Keep pressing this key to make vertical feed upward untill release
A15	Cross feed (inward)	Keep pressing this key to make Cross feed inward until release
A16	vertical feed (Downward)	Keep pressing this key to make vertical feed downward untill release
A17	Spindle motor	Left : off / Right : on
A18	Axis for MPG	Y: vertical feed, Z: Cross feed
A19	Adjustment of MPG	X 1: 0.001 mm per graduation X 10: 0.01 mm per graduation X 100: 0.1 mm per graduation
A20	MPG	Clockwise“+”，Y-axis feed upward，Z-axis feed inward Clockwise“–”，Y-axis feed downward，Z-axis feed outward

4.1.3Function of buttons on the screen:



4.1.3.1 Rotary Grinding Operation

Press " Operation" to start " Rotary Grinding Operation" page.

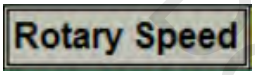


Show current Y position.

Show current Z position.

Show coarse feed/time (by potentiometer)

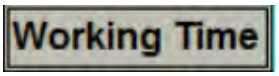
Show fine feed/time (by potentiometer)



Show rotary speed (rpm).

Number of spark out setting (by potentiometer)

Number of spark out remained

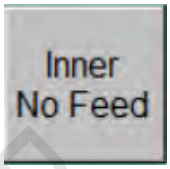


Timer

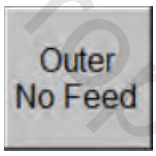
Show rotary linear speed (linear speed= ∏ dn/1000* rotary speed up ratio)。

Show vertical/cross VR ratio(%)。

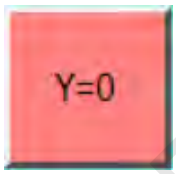
Rotary on/off



Inner feed/no feed shift.



Outer feed/no feed shift.

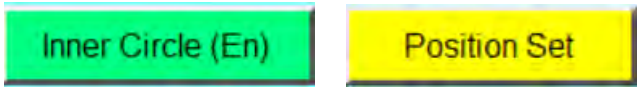


Zero point setting for vertical (Y axis).

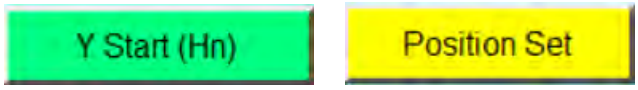
Current machining step display.

Resume to first machining step.

Starting point setting for cross direction (Z axis), to make the set-up point of the cross direction as the initial grinding point.



Stopping point setting for cross direction (Z axis), to make the set-up point of the cross direction as the final grinding point.

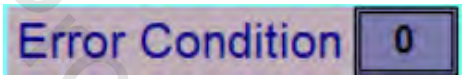


Starting point setting for vertical direction (Y axis), to make the set-up point of the vertical direction as the initial grinding point.

Setting of removal allowance.

Total machining step display.

1 = Step 1 , 2 = Step 1 + Step 2 , 3 = Step 1 + Step 2 + Step 3.



Show error code.

Indication of error

Current grinding function display.

To “Rotary Grinding Operation” page.

Preview of removal allowance of each machining step and position of each step

Parameter (**Grinding**) setting

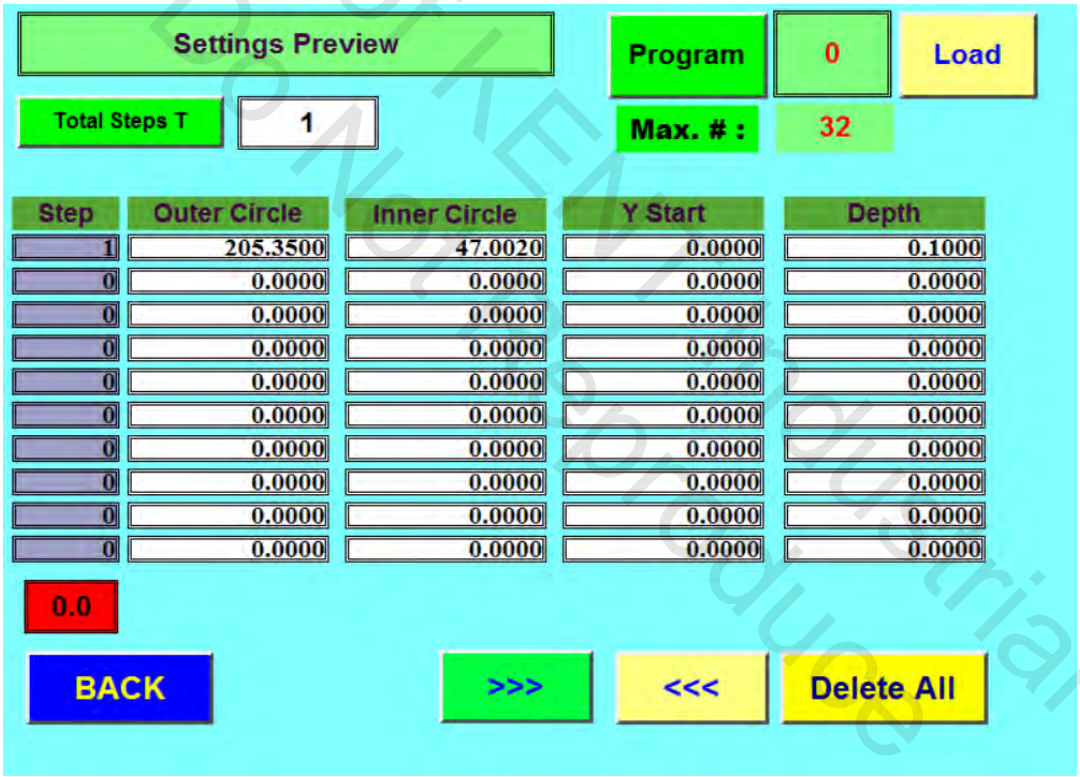
Wheel dressing mode

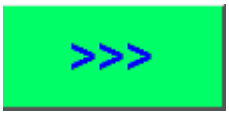
Auto grinding pause，vertical axis will go up after pressed. After this pressed and pressed again, system will resume its movement and vertical position before pause.

Pressing this before to make the spindle down to initial grinding point, it’ s for foolproof function for safety.

4.1.3.2 Settings preview

Press this button and go to “Settings preview” page.





Total machining step display.

1 = Step 1 , 2 = Step 1 + Step 2 , 3 = Step 1 + Step 2 + Step 3.

Step	Outer Circle	Inner Circle	Y Start	Depth
1	205.3500	47.0020	0.0000	0.1000
0	0.0000	0.0000	0.0000	0.0000
0	0.0000	0.0000	0.0000	0.0000
0	0.0000	0.0000	0.0000	0.0000
0	0.0000	0.0000	0.0000	0.0000
0	0.0000	0.0000	0.0000	0.0000
0	0.0000	0.0000	0.0000	0.0000
0	0.0000	0.0000	0.0000	0.0000
0	0.0000	0.0000	0.0000	0.0000
0	0.0000	0.0000	0.0000	0.0000

Preview of parameter for each machining step.

Vertical/Cross VR ratio (%)。

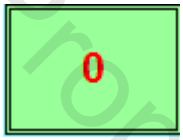
Back to “Rotary Grinding Operation” page.

Go to next page.

Back to previous page.

Delete all.

Enter the saved the machining step number, from 0 to 32.

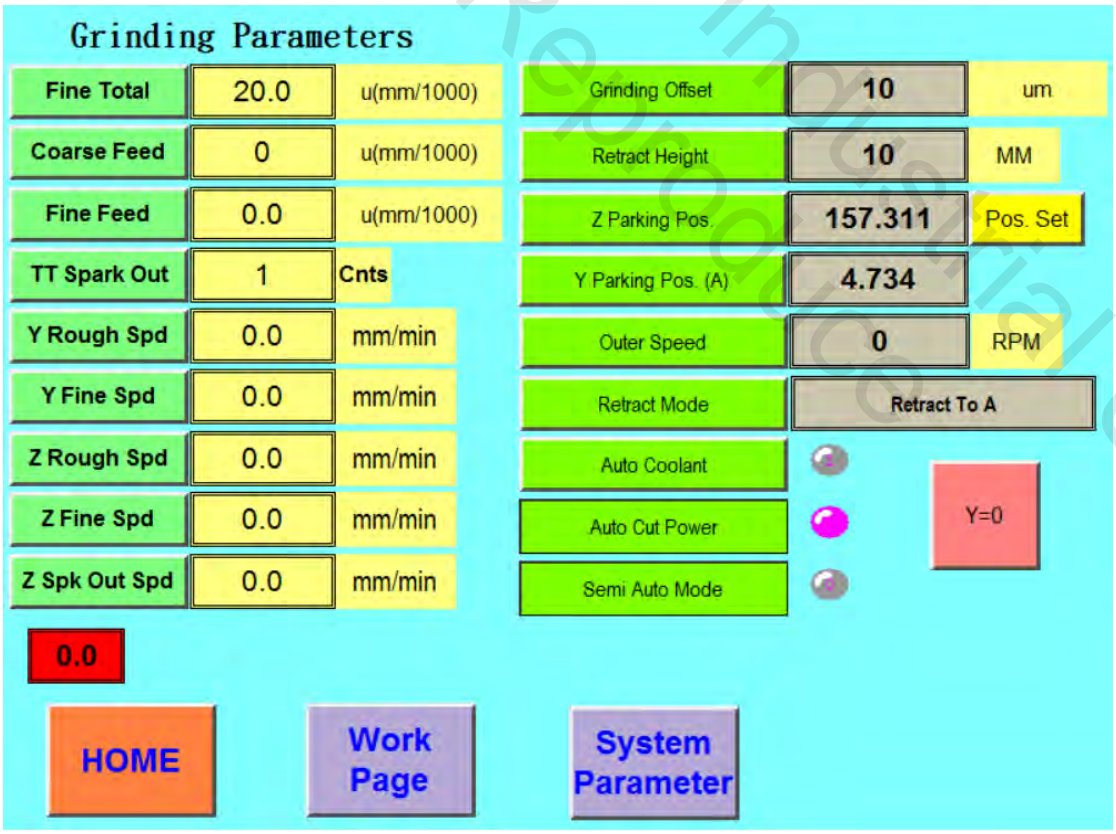


Display the saved machining step umber.

Loading the saved machining step number.

4.1.3.3 Grinding Parameters

Touch this button and go to "Grinding Parameters" page.



Removal allowance for fine grinding.

Set once coarse feed amount.

Set once fine feed amount.

Numbers of spark out.

Down feed speed of rough grinding per min.

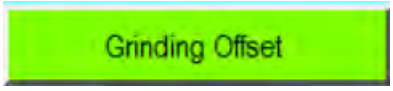
Down feed speed of fine grinding per min.

Cross movement speed setting (per min) to cooperate with down feed speed of rough grinding.

Cross movement speed setting (per min) to cooperate with down feed speed of fine grinding.

Cross movement speed setting (per min) (from outer to inner) to cooperate with spark out.

Show vertical/ cross VR ratio (%)



The offset value to the set-up point.

Setting the retract height after each machining step finished.

Set Z axis parking position after machining.

Set Y axis parking position after machining.

Outside diameter rotating speed setting.

Setting for the parking mode after Y axis machining finished.

When red light on, auto coolant on.

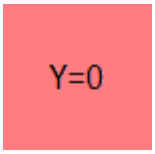
When red light off, coolant ON/OFF manually.

When red light on, power off automatically after program finished

When red light off, power won’ t off automatically after program finished

When red light on, semi auto mode (Vertical feed by MPG while rotary table and cross axis operating automatically).

When red light off, fully auto mode.



Zero point setting for vertical (Y axis).

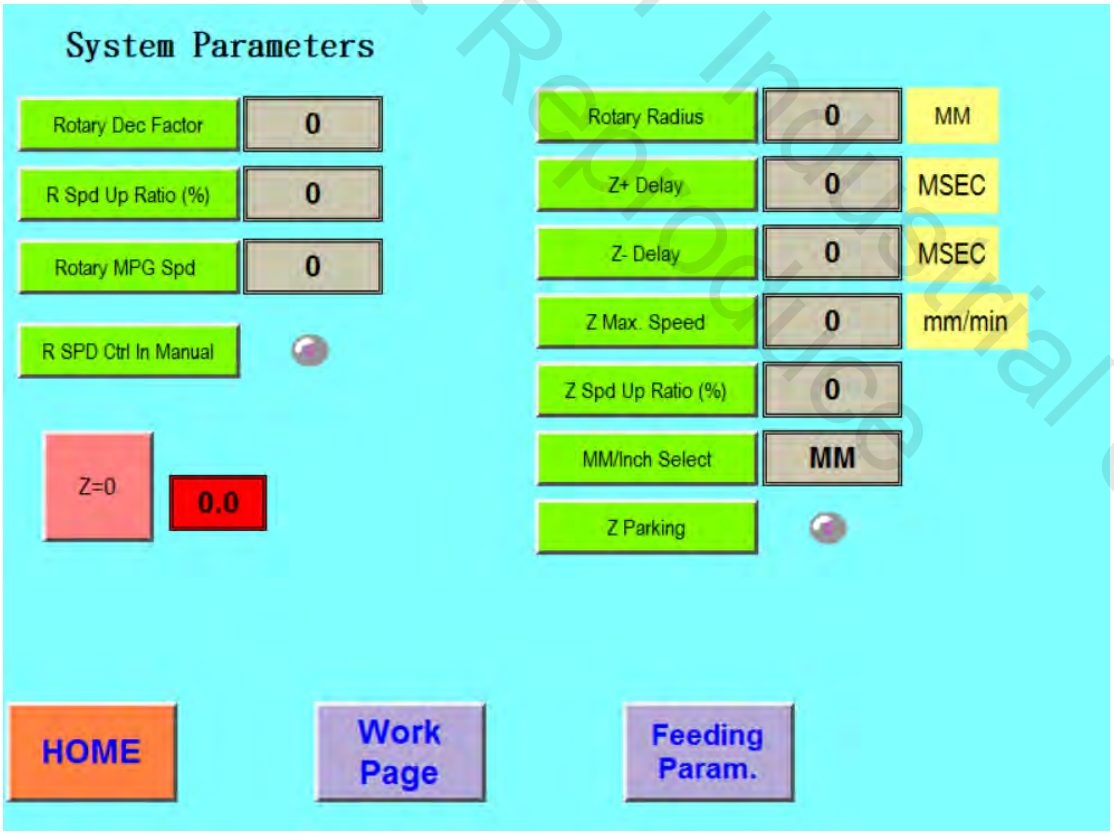
To "Rotary Grinding Operation" page.

To "Work page" .

To "System Parameters" page.

4.1.3.4 System Parameters

Press this button and go to "System Parameters" page.



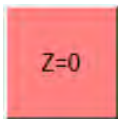
Acceleration /deceleration time of rotary servo motor start/ stop.

Rotating speed acceleration ratio when wheel move from outside toward center.

Setting for rotating speed of rotary table controlled by MPG.

When red light on, rotating speed changes while cross movement applied by rapid feed or MPG.

When red light off, rotating speed unchanged while cross movement applied by rapid feed or MPG.

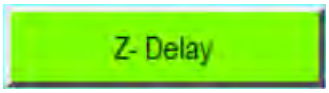


The zero point off Z axis (Cross) must be the center of the rotary table.

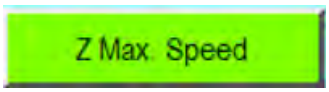
Show vertical/ cross VR ration (%)

Rotary table radius setting.

The delay time setting (Z-axis) for reverse movement after outside diameter reversal point reached.



The delay time setting (Z-axis) for reverse movement after inner diameter reversal point reached.



Maximum feeding speed setting for Z axis.

Z axis speed increase ratio when wheel move from outside toward center.

Metric (mm)/ Imperial(inch) shift. Parameters must be resetting after shifting.

When red light on, back to Z-axis parking position after program finished

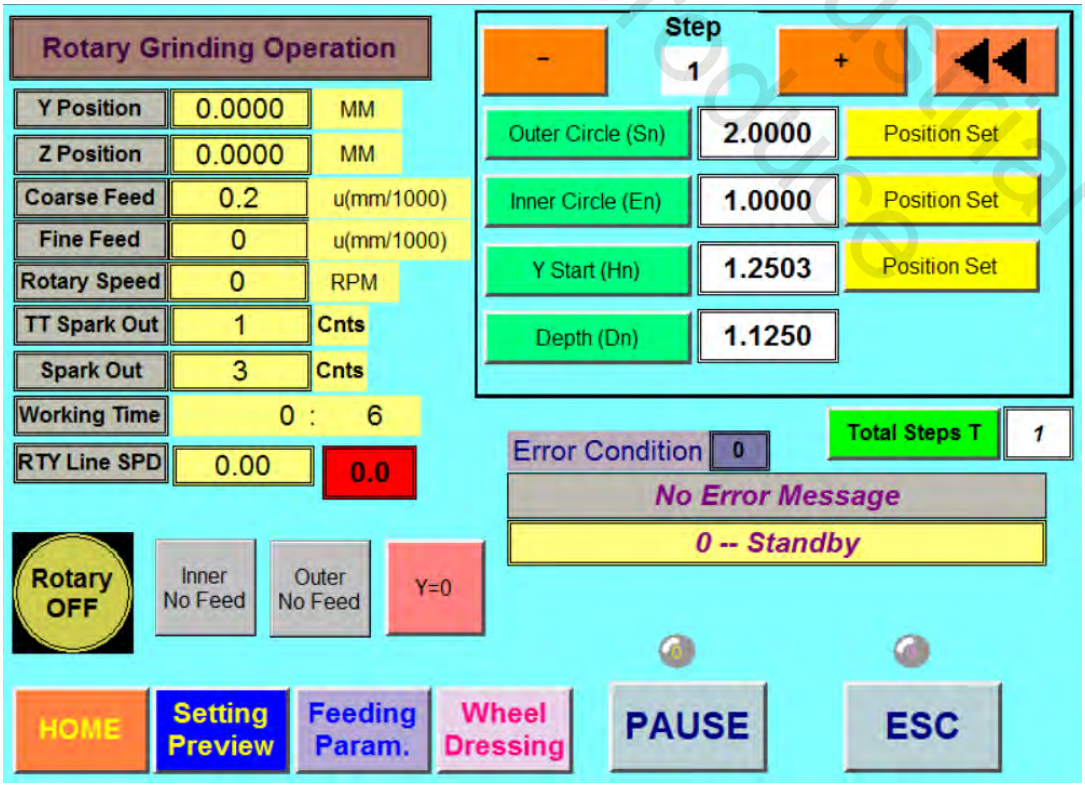
When red light off, stop in the position when program finished.

To "Rotary Grinding Operation" page.

To "work page" .

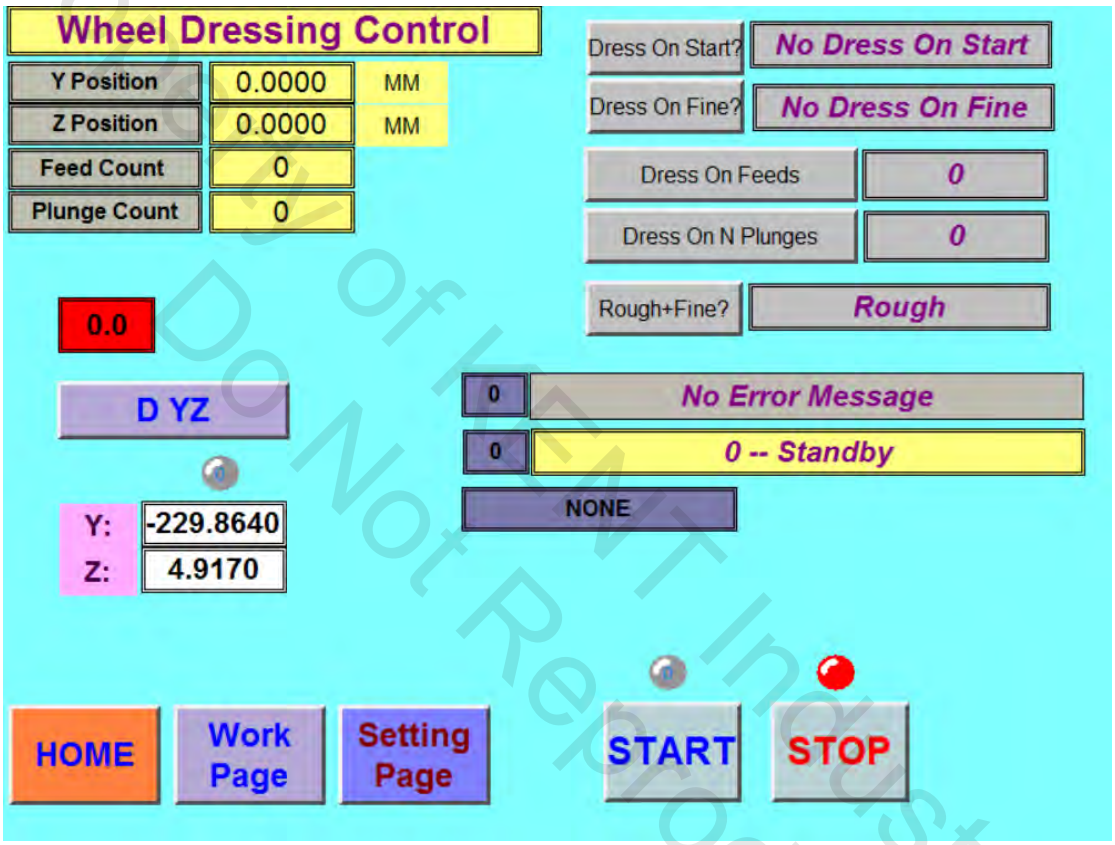
To "Grinding Parameters" page.

On " Rotary Grinding Operation" page.



4.1.3.5 Wheel Dressing Control

Press this button and go to "Wheel Dressing Control" page.



Show current Y position.

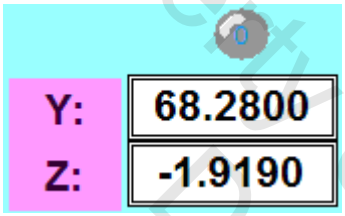
Show current Z position.

Show accumulative feed count. (Will be “0” after wheel dressing finished)

Display accumulative plunge count. (Will be “0” after wheel dressing finished)

Show vertical/ cross VR ration (%)

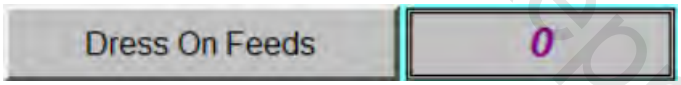
Remember dressing position. (Touch this button, the current position will be remembered)



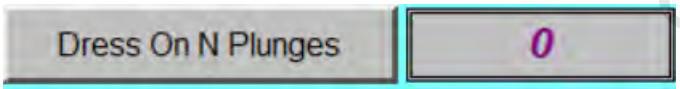
When light on, wheel dressing position is memorized.

Dressing setting before rough grinding.

Dressing setting before fine grinding.



Dressing setting after times of down feed. (For surface grinding)



Dressing setting after times of down feed. (For plunge grinding)

When under manual dressing mode, could select dressing before rough grinding only or dressing before rough and fine grinding.

Show error message.

Current dressing step display.

To "Rotary Grinding Operation" page.

To "Work page" .

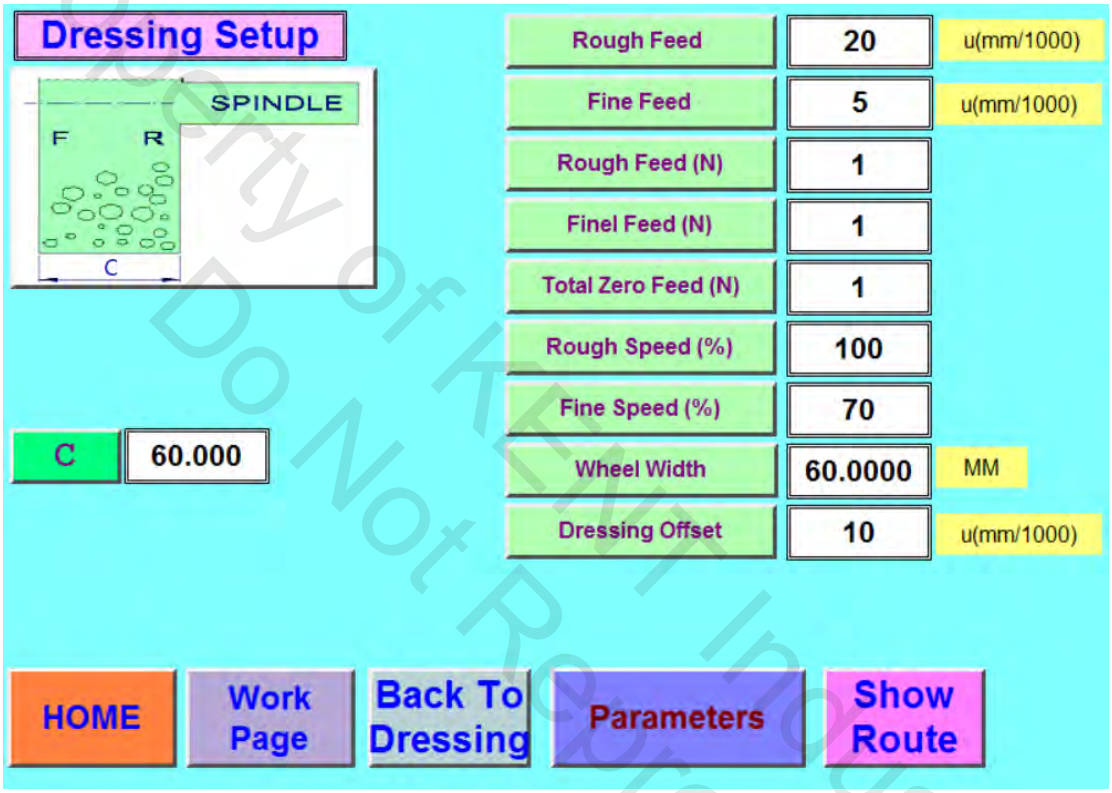
To "Dressing Setup" page.

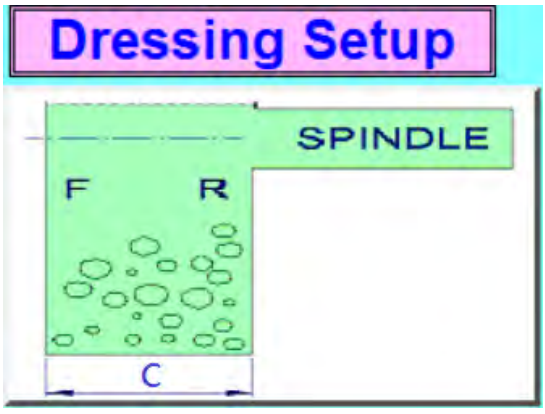
To execution single auto dressing or instant dressing of program.

Dressing stop.

4.1.3.6 Dressing Setup

Press this button and go to “Dressing Setup” page.





Rough dressing amount

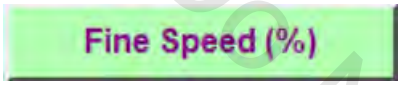
Fine dressing amount

Number of rough dressing

Number of fine dressing

Number of zero down feed dressing.

Speed adjustment when rough dressing



Speed adjustment when fine dressing

Set wheel dressing width (must larger than wheel thickness)

The offset value to the diamond touch point.

Back to "Rotary Grinding Operation" page.

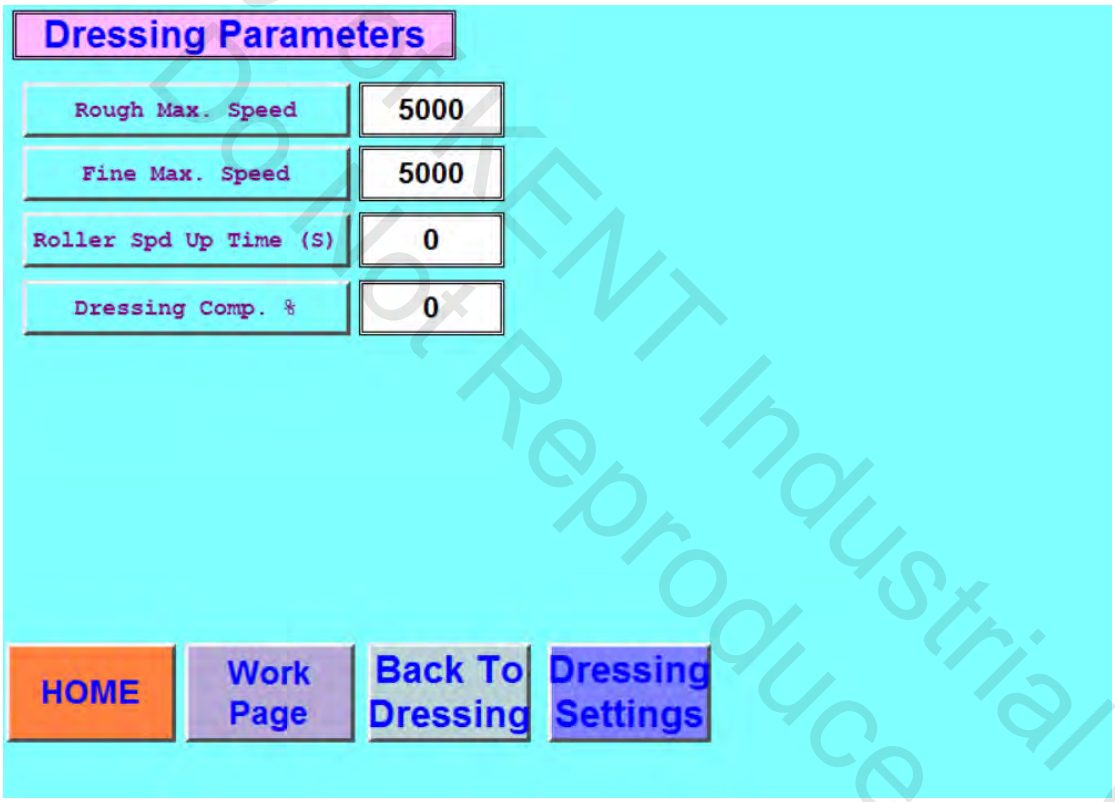
Back to "work page" .

Back to "Wheel Dressing Control" page.

To "Dressing Parameters" page.

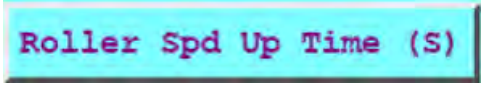
4.1.3.7 **Dressing** Parameters

Press this button and go to “Dressing Parameters” page.

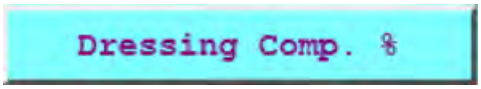


Maximum rough dressing speed setting for cross axis (2000~4000)

Maximum fine dressing speed setting for cross axis (2000~4000)

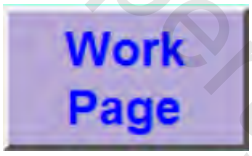


Delay time to wait roller dresser to full rpm speed then dressing started.



Setting for dressing compensation ratio (%)

To "Rotary Grinding Operation" page.



To "Work page" .

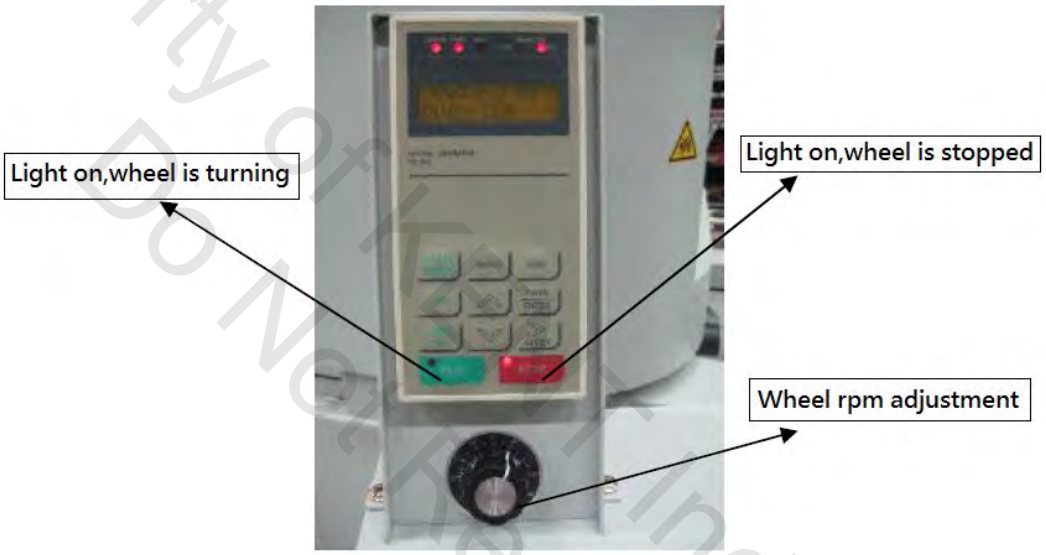
To "Wheel Dressing Control" page.

To "Dressing setting" page.

4.1.4Auto-dressing

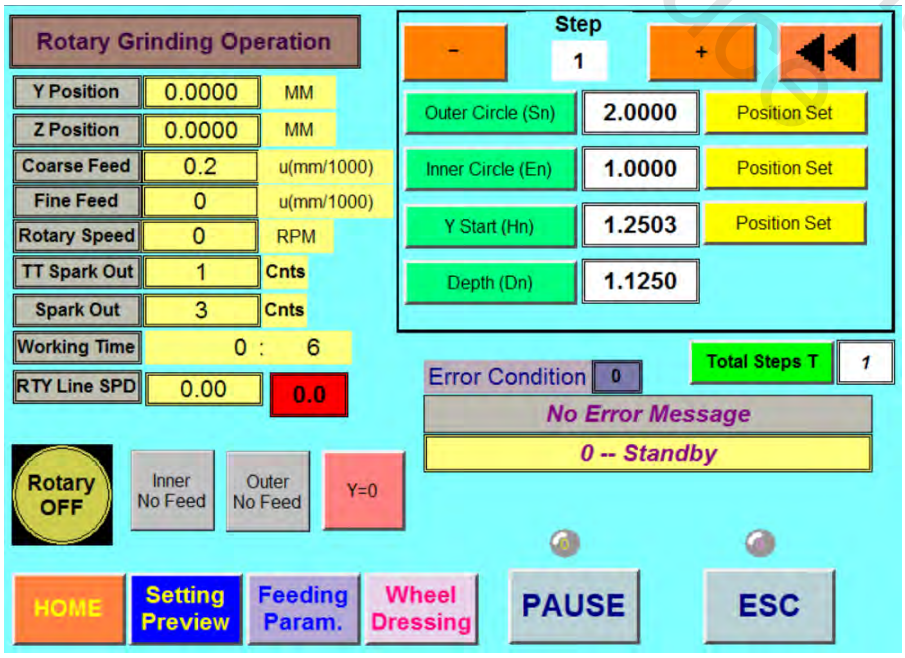
Set auto-dressing before rotary grinding started.

1.  Switch A17 to “on” on the control panel.
2. Wheel turning started



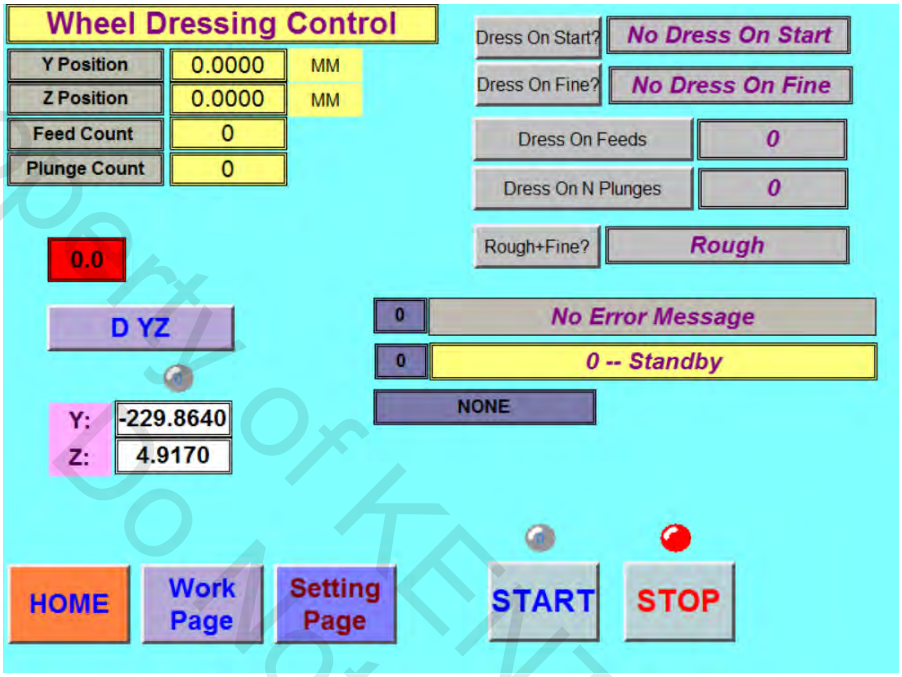
3. Press 

on touch screen to start "Rotary Grinding Operation" page.



4. Press 

and go to "Wheel Dressing Control" page.

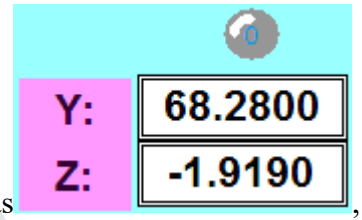


Be noticed that the wheel on Y-axis should be lifted to the a higher position than diamond dresser.

5. Operate manual mode on Y-axis and Z-axis to make wheel setup with diamond dresser to do dressing first time.
6. Firstly, operate manual dressing to memorize the position of wheel and diamond dresser.
7. Use MPG (Switch to Z-axis) and move Z-axis to make diamond dresser tip right under the wheel.

Turn off MPG (axis) till wheel position is stored (as following steps shown). Then turn on MPG

8. Press 

and the memorized wheel position will be shown as 

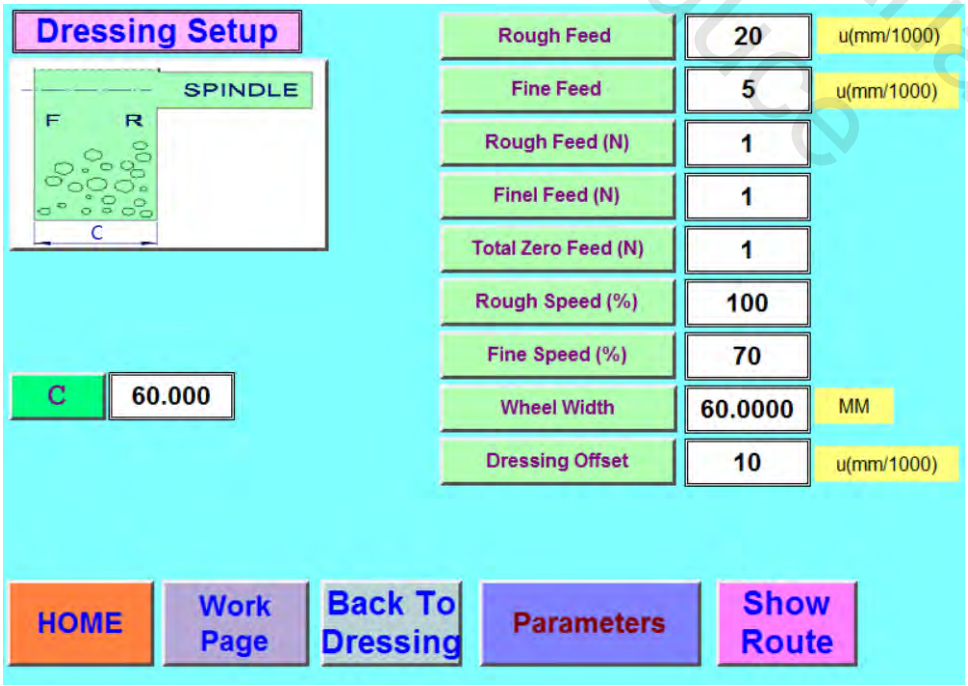
, meanwhile, the light below 

should be on so that the setup is finished. (Once the machine is power off, the auto-dressing position should be re-memorized.)

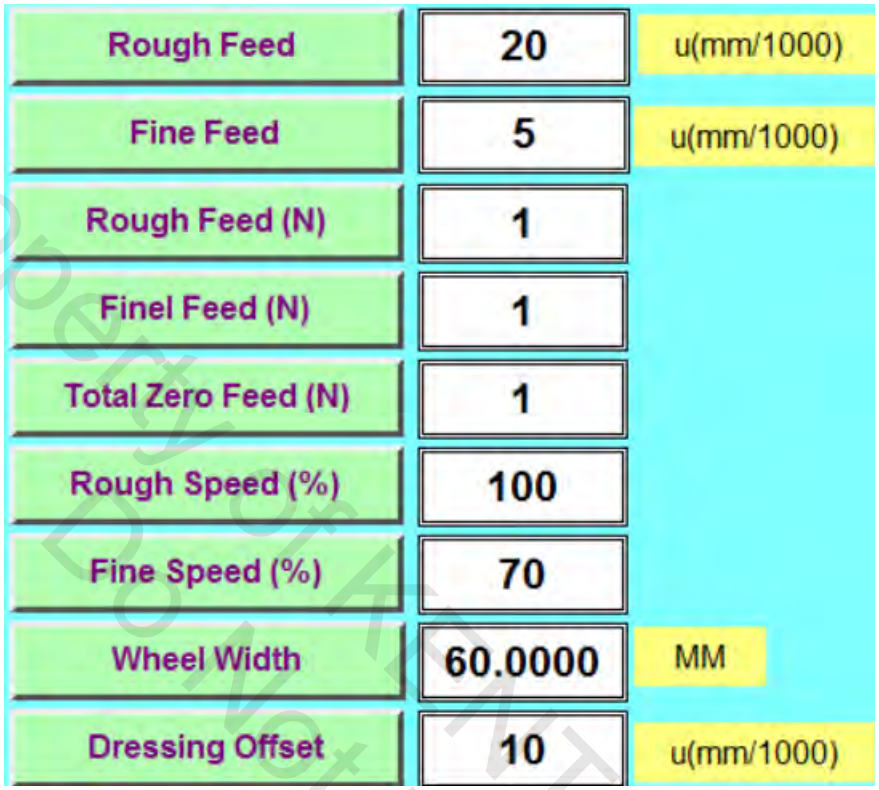
9. When setting dressing steps, the screen is shown as below:

10. Press 

and go to "Dressing Setup" page.



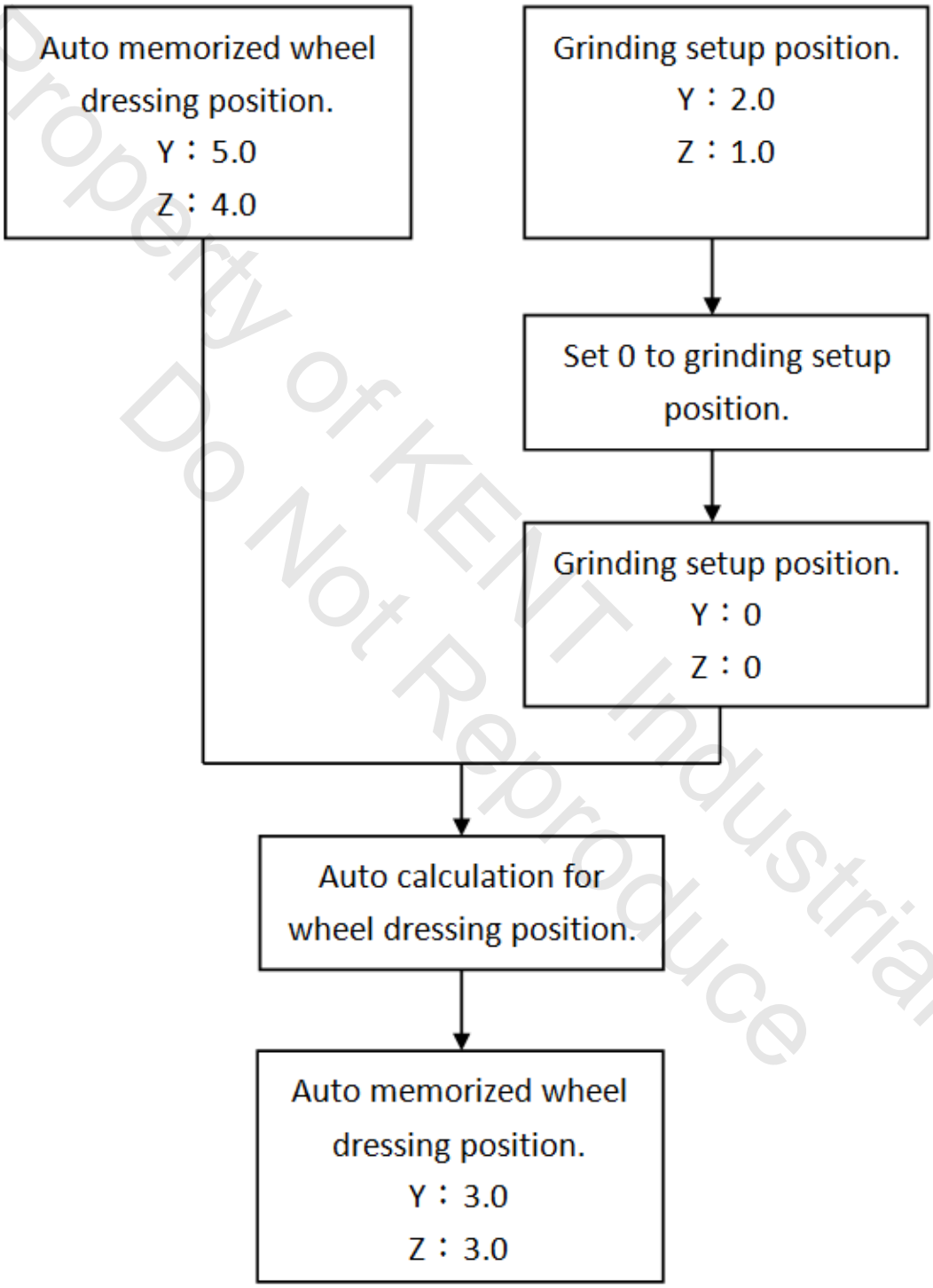
11. Input dressing data as shown below.



12. After finishing dressing setting, press 

to back to “Rotary Grinding Operation”page.

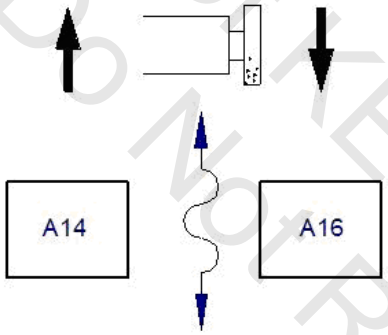
Example：



4.2 The Z axis

Touch A13 A15 to make rotary table move forward or backward, keep pressing those two buttons to make continuous feed till the limit.

4.3 The Y axis



Press to make Y-axis move rapid upward or downward (240mm/min), keep pressing those two buttons to make continuous feed till the limit.

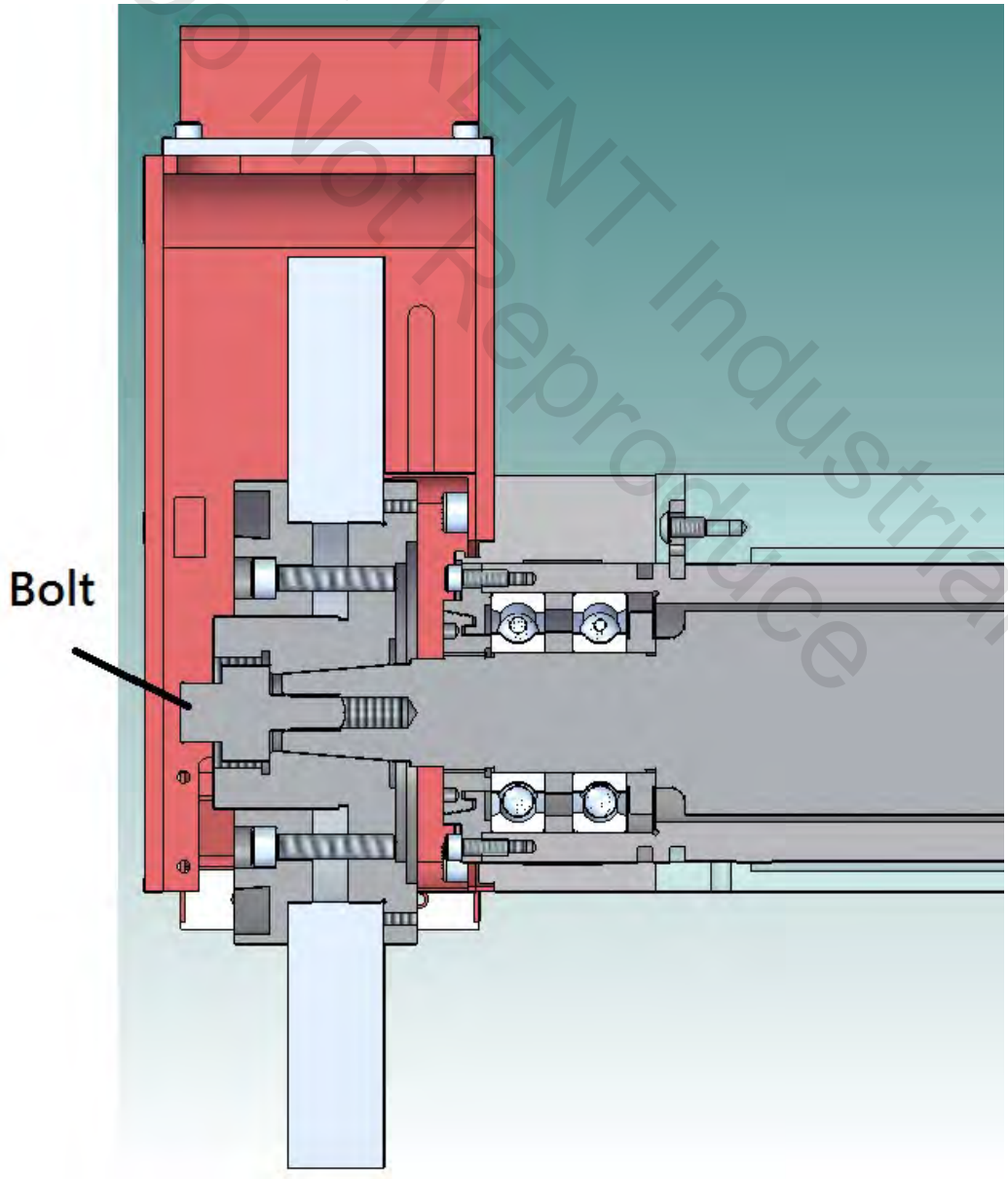
※Remark：

Please be attention of the distance among wheel, work piece, and table to avoid collision.

4.4 Installation about the grinding wheel

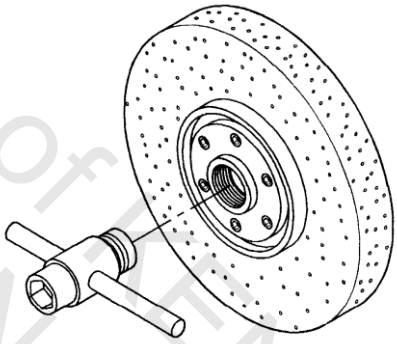
4.4.1 Mounting of the grinding wheel

Tighten four bolts enough to hold the wheel firmly in the position of the adaptor as shown on the following drawing. Do not tighten too much, as excess clamping pressure may crack the wheel. To put the wheel unit onto the spindle, first see that both the wheel adaptor hole and spindle nose are perfectly clean. Then mount the wheel unit on the spindle and tighten the spindle nut by the wheel adaptor and puller.



4.4.2 Dismounting of the grinding wheel

To remove the wheel unit from the spindle, first remove the spindle nut (left hand thread) using wheel adaptor and puller. Then tighten an adaptor puller nut (also supplied with the machine) into the wheel adaptor and puller until the bottom of the wheel adaptor and puller & nut contacts against the end of the adaptor. Then turn the wrench clock until its end touch the end of spindle nose so that adaptor can be loosened from spindle nose.



4.4.3 Balancing of the grinding wheel

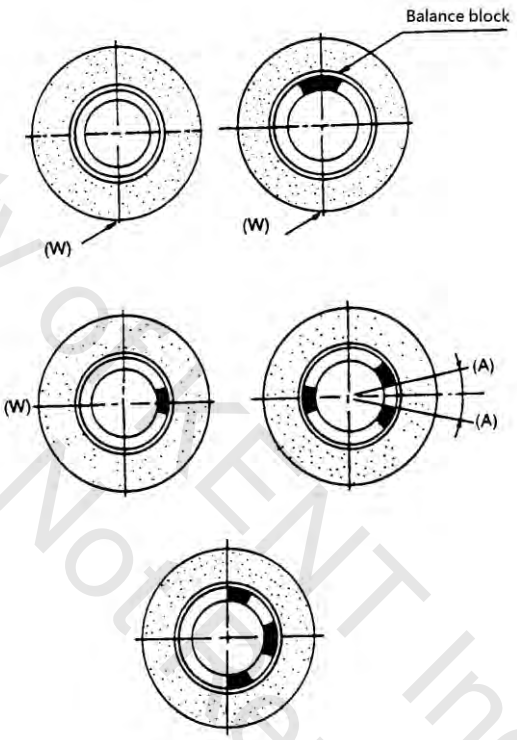
It is essential that the grinding wheel run without vibration on the machine after well balanced.

Proceed as follows in balancing a wheel on its adaptor.

1. Mount the entire wheel unit with an adaptor onto the spindle and rough through the wheel so that it may be trued cylindrically.
2. Remove this unit from the machine. Insert the balancing arbor and place the unit on the balancing stand.
3. Allow the unit to run free until it comes to rest. Bottom point (W) will be the heavier side and mark this point (W) with a chalk.
4. Tighten one of three weights into the groove of adaptor at the opposite of the heavier side (W).
5. Turn the wheel by 90° and check which sides heavier.
6. If the side (W) is observed to be light, tighten two weights in symmetry as shown on the right. Each opening angle (A) must be adjusted according to the amount of in balance.

7. If the side (W) is heavier, weights are tightened as also shown on the right.

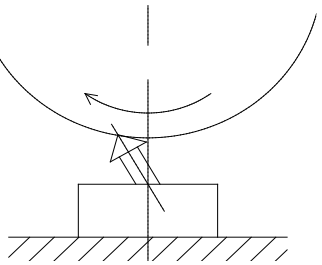
8. Adjust the position of two weights repeatedly until the wheel is in well balance when turned in any positions on the stand.



※Reminder：

In balancing of a grinding wheel after applied a coolant in the grinding operation, run the wheel on the machine several minutes in the dry so that the coolant in the wheel may be eliminated.

4.4.4 Dressing operation of grinding wheel



Followings are important factors to be considered in the dressing operations of the grinding wheel.

1. The diamond tool must be placed on the table at an offset position from the vertical center line of the wheel as shown on above for preventing the digging of the wheel.
2. Excess dressing amount must be avoided for preventing of the or burn of diamond. With a same purpose, coolant must be amply applied on the diamond while dressing operation.
3. A sharp diamond must be used for higher productivity. A dull diamond will cause a glazing of the wheel.
4. In order to obtain a sharp edge of the diamond, turn it in the holder so that new sharp edge can dress the wheel.
5. In order to obtain a better surface finish of the work piece ground, uniform cross feed of dressing is required. A glazed wheel with a dull diamond will tend to give better surface finish of the work piece. The use of diamond tool on the table with a saddle cross feed usually provides better surface finish as compared to the use of dresser mounted on the wheel head.

5 Operator's checking before operation

5.1 Operator' s checking before operation

Prior to the grinding operation, once again check the following items to insure successful operation.

1. Cleaning of the machine. Remove rust preventative.
2. The lubrication system is the rear parts of the grinder , open up to fill in with the recommends lubricant.
3. Make certain the machine voltage before connecting it to your power supply. The name plate of the machine voltage is attached on the electrical power box.
4. Check the rotation of the wheel with the arrow on the wheel guard. If incorrect, one phase of the power supply line must be changed over.
5. Check the oil gauge at the top of column to see if there is oil running when press the A-11 button after 1 or 2 minutes.
6. Inspect the grinding wheel specification and its safety requirements. Consult your wheel supplier for recommended grades of wheel for various materials to be ground.
7. Grinding wheels should be dressed regularly.
8. Care should be taken for the mounting and handling of the wheel to wheel adaptor and also their unit to spindle nose.
9. A light cut of mounting surface of magnetic chuck, if necessary, must be taken to prevent the bending of table after clamped.

5.2 Test Running

1. Touch screen inspection: whether it is on or not & stays on the main page.
2. Press “Rotary on/off” on the screen, to check the table rotating or not.
3. Press panel spindle ↑ up spindle (value of "+"), the spindle ↓ down (value "-").
4. To check the motor rotary direction, dust suction system and water injection for testing run, turn A-08 and A-10 to right. If correct, then turn A-08 and A-10 left.
5. After pressing “A-11” one or two minutes, please check if there is oil at the inspection window on the upper part of the front of the column.
6. Please check the specification of grinding wheel and safety rpm. Please check with the grinding wheel supplier to select appropriate wheel regarding to the workpiece material.
7. Please assemble the flange into the grinding wheel then the assemble this set to the spindle front end.
8. Please make sure the grinding wheel is dressed well.
9. The surface of the working table is grinded before machine shipped out from factory, no necessary to grind it again.
10. Before the magnetic chuck installed on the working table, please be sure the surface underneath is grinded to totally flat, which in order to prevent the working table deformation caused by rough underneath surface of magnetic chuck.

Follow the way to select switch and can select another processing mode to test other function. If all movement is normal then the trial running is finish.

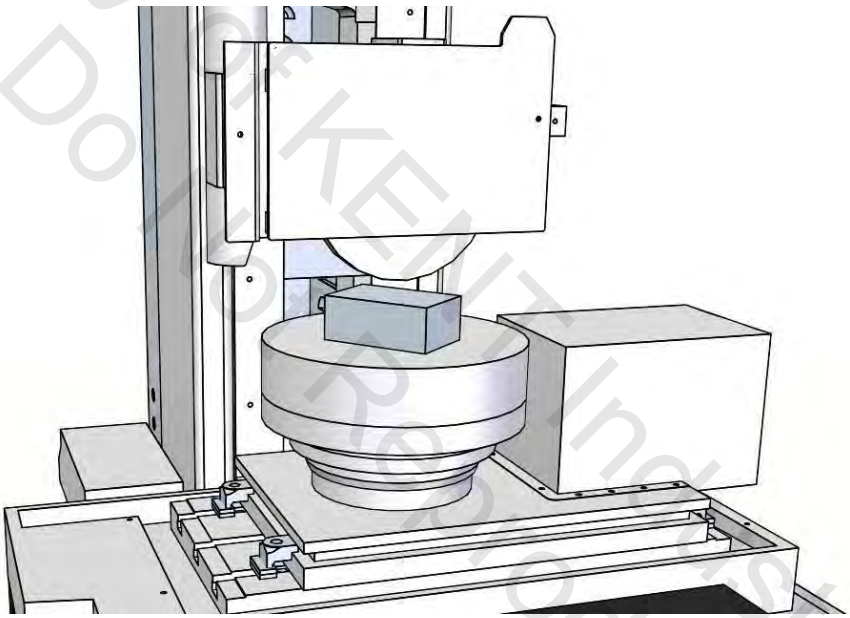
※ Caution:

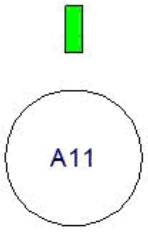
If press button OFF. Please restart the machine after 15 seconds . Do not restart immediately.

6 Machine Operation

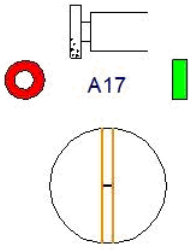
6.1 Machine Operation

1. A wheel out of balance worsens accuracy of the work piece and will shorten life of spindle.。
2. Wipe well the surface of the chuck with a sweeping plate, wiper or wastes, and put the work piece lightly onto the chuck which will hold the work piece firmly.

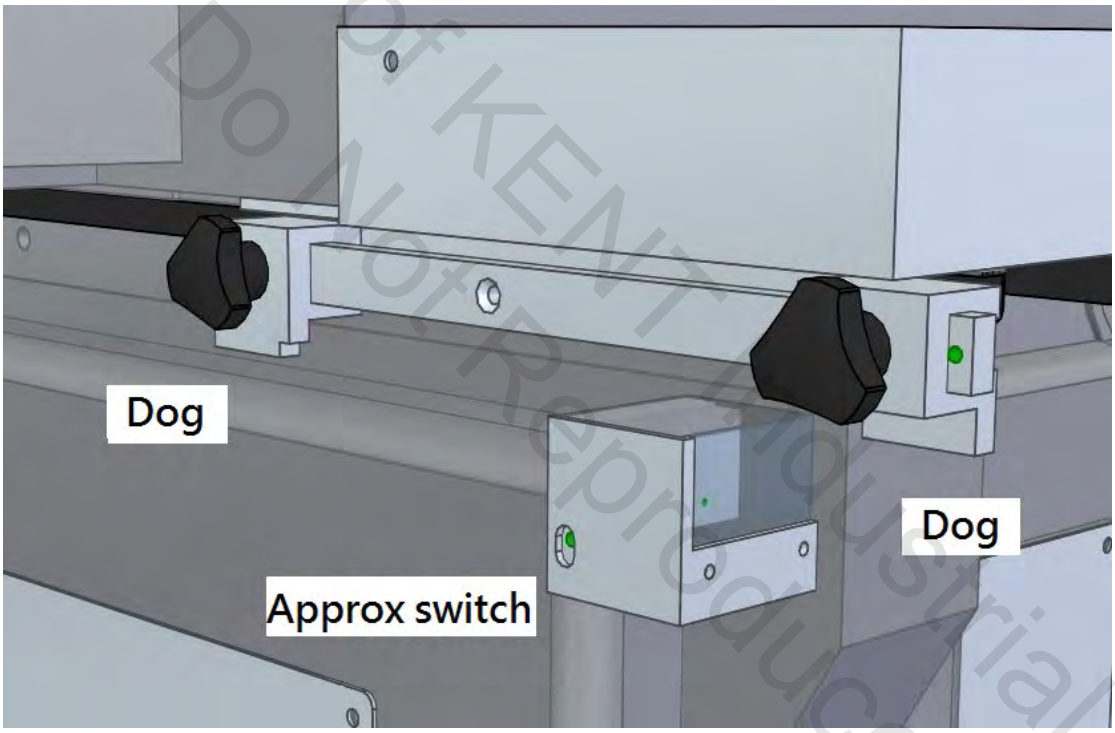




3. Press main power button 。
4. If having a magnetic attachment to adjust, turn the knob to adjust the A-02 Magnetic clamping.
5. Adjust the position of the table dogs on the right and left side in accordance with the length of the work-piece.
6. Clamp the workpiece on the chuck.



7. Start the spindle motor button A-17 to the right. 。
8. Into the grinding page, ON switch to start the disc, the disc is rotated clockwise.
9. All grinding parameters according to the needs of the grinding set.
10. Re-adjust the dogs to get suitable travel length to meet the work-piece.



11. (A-05) rotary button to re-adjust the feed rate.
12. When the vertical feed hand wheel is revolved, the wheel is allowed to cut in the work. In this case, great care should be taken so that the wheel will not encroach upon the work-piece on account of overfeeding on occasion when it approaches the work-piece. It is also recommended that in-feed will be made, allowing the longitudinal hand wheel to operate slowly.
13. When the wheel in contact with the workpiece, you can start grinding operation, the feed rate to the appropriate attention.

※ Feed rate proposal

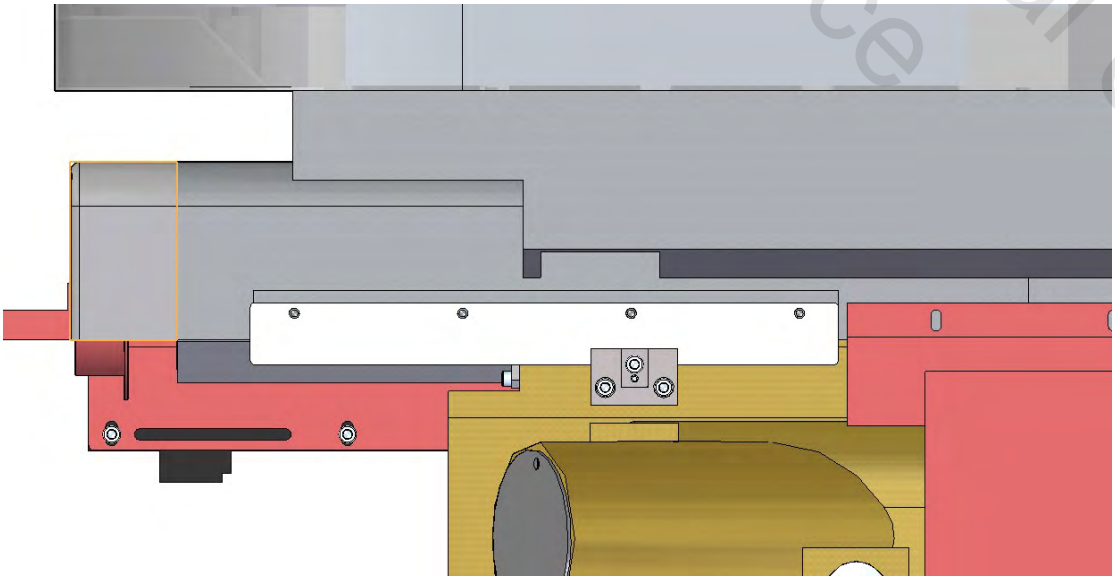
Dry traverse grinding	Coarse	Vertical feed	0.01～-0.03 mm (0.0004"～0.0012")
		Cross feed	2.5～5 mm (0.1" ～ 0.2")
	Fine	Vertical feed	0.0025～0.005 mm (0.0001" ～ 0.0002")
		Cross feed	1～3 mm (0.04" ～0.12")

※Note:

1. The feed amount for wet grinding (pouring water) should be 50-100% more than for dry grinding.。
2. Select the amount of feed properly in accordance with grain size, hardness of the wheel and material or hardness of the work piece.

6.2 The Saddle Clamp Device

This design is only for single slot grinding (plunge grinding), form grinding, and the machining without cross movement.



6.3 Dust Suction or Coolant System

Magnetic Separator Coolant System (OPT)

During dry grinding, usage of magnetic separator coolant system is suggested due to the facts the dust/particle causedby drying grinding is harzardous to machine and human health.

Grinding dusts pollute the air in the shop and are harmful to the security of the machine and the health. The height of the mouth of the dust suction is adjustable. Accordingly, efficiency of dust suctioning can be enhanced, when the mouth is lowered enough within the limits of that is does not impede with the work-piece.

Note: Never use the dust suction system in the case of wet grinding (pouring water).

7 Maintenance

7.1 General Maintenance

It is essential that the following periodical maintenance will be kept, in order to keep the original accuracy within a long period of time.

1. Wipe every part of the machine, in particular, its polished part with Oil-immersed cloth after wiping it with dry cloth at the time of completion of the operation.
2. Remove grinding chips in the inner part of the wheel guard or on the surface of the table.
3. Place rust proof oil on certain parts of the machines

7.2 Notice of Usage

1. Before grinding, please calibrate the balance of the grinding wheel.
2. Choose the grinding wheel properly according to its material and hardness.
3. The joint between the flange of grinding wheel & the spindle need to be greased to prevent from corrosion.
4. To use the air gun for cleaning is not allowed.
5. Pay attention if the circulation of the oil is smooth.
6. Use Mobile # 1405 lubricant and change the lubricant every 3~6 months. For primary stage, it is better to change the lubricant every 1~2 months.
7. Regulate the screw of adjusting the oil volume to proper position. Regulate clockwise for decrement and counter clockwise for increment of the oil volume.
8. Clean the coolant unit and replace water regularly. If the water is too dirty, it may scrape the surface of the work-piece.

Dry grinding:

1. Please clean the suction unit and filter every week.
2. If the suction is weak, please check if there is anything clogged inside the suction tube.
3. Please keep the suction tube clean, or it may cause burning.

7.3 Chuck

The surface of the chuck is an important surface which becomes a standard of accuracy, but it has a tendency to be scratched, because it is make of soft steel material. It is, therefore, necessary to treat it with consideration as much as

possible. It becomes necessary to grind the surface of the chuck over again, if its accuracy gets out of order or there come out some scratches on it.

7.4 Grinding Wheel Spindle

As grease lubrication is given for the grinding wheel spindle bearings, oiling is not required for it. In case its accuracy will be reduced after a few years usage of it (its service life is dependent upon the condition of usage), return it to our company for its repair or replace it with a new spindle. (Please tell us the spindle code)

7.4.1Procedure for the replacement of the wheel spindle

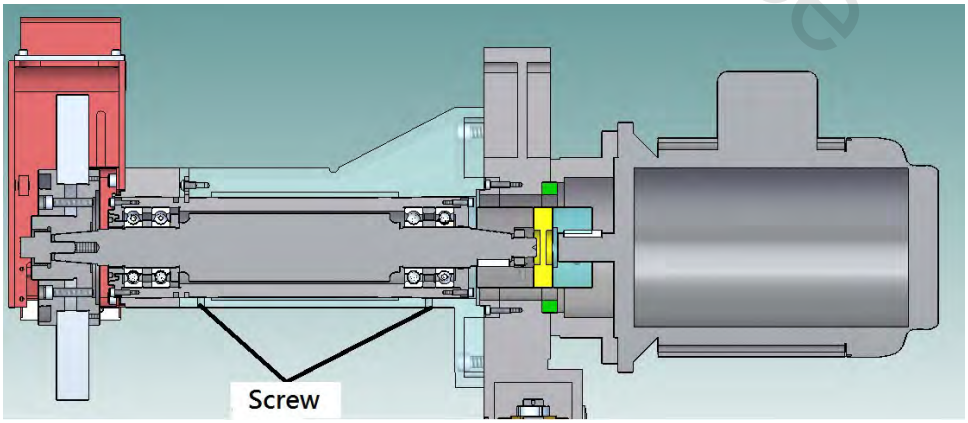
Required：

crane、wire-rope、wrench、T-type spanner、M12x100 screw、plastic hammer

1. Remove wheel &wheel guard , supporting rod ad side cover of wheel head.
2. Take apart the setting screw (6 pcs) on the front face, then fit M12*2 pcs on the side (left & right each) for easy job.
3. Loosen the setting screw (3 pcs) on side and bottom of wheel head.
4. Hold on M12*100L*2pcs by left & right hand , slightly turn the spindle unit and move outward.
5. Use the wire-rope for assistance preventing drop down.

Notice：

1. Be cautious while any tool is in use such as crane, screw driver..etc.
2. When there is a problem of removing the spindle from the spindle head, hit the spindle gently and smoothly by hammer till the spindle is movable from the machine.
3. The front section of the spindle is heavier, please keep the rope at the position between spindle center to front.



Notice:

When assemble the spindle, please reverse the procedure of disassembling, but please don’t screw wheel guard too tight to spindle, to prevent the interfere spindle.

7.4.2Spindle motor assembling/disassembling procedure

Required：crane、wire-rope、wrench、wooden blocks

1. Make spindle head down to the position where the distance between column and table is 50MM，slightly press and fix spindle head with wooden blocks then switch off power supply.
2. Remove the fixing parts behind column.
3. Unplug the servo motor, then remove the power supply of the servo motor.
4. Bind the motor with wire-rope, then hang the motor up slightly with crane. Tighten the wire-rope up and remove the 4 fixing screws of the motor.
5. Slightly turning the motor and pull out the motor backward of spindle head, so that make the motor apart from transmission coupler。
6. Hang down the motor with crane.

7.5 Lubrication System

7.5.1 Lubrication pump

1. Please replace lubrication oil per 3-6 months
2. To maintain high precision, it is better to replace lubrication oil properly.
3. With replacing lubrication oil regularly, it can help to avoid the stock of oil filter and the burning out of oil pump.

Lubrication oil

Item	Liters	Oil specification	Notes
Lubrication pump	KRGH-400series –2 liters	Mobil 1405	Please replace lubricant oil every 3-6 months.

8 Grinding Faults and Their Corrections

Type of trouble	Probable cause	Suggestions for correction
Chatter Mark	Outside vibrations	Install the machine on the place where vibrations and shocks are separated from other machineries such as planer, press, crane, etc.
	Unbalance of grinding wheel	Balance the wheel
	Wheel face out of true	Re-true the wheel
	Inadequate installation	Check the leveling are rested securely on the leveling plates
	Table reversing shock	Adjust the tarry valve on the hydraulic tank.
	Wear of wheel spindle bearing	Replace the new bearings
Burn	Glazed wheel	Dress the wheel
	Wrong grinding wheel	Change the wheel specifications Use the wheel with * Softer bond (low grade) * Coarse structure. *Larger grit (Coarser size)
	Grinding condition	* Higher table speed * Smaller down-feed * Smaller cross-feed
	Coolant	* Plenty of coolant * Use of solution type coolant from non-soluble type
	Wheel Dressing Required	* Use of sharp diamond tool

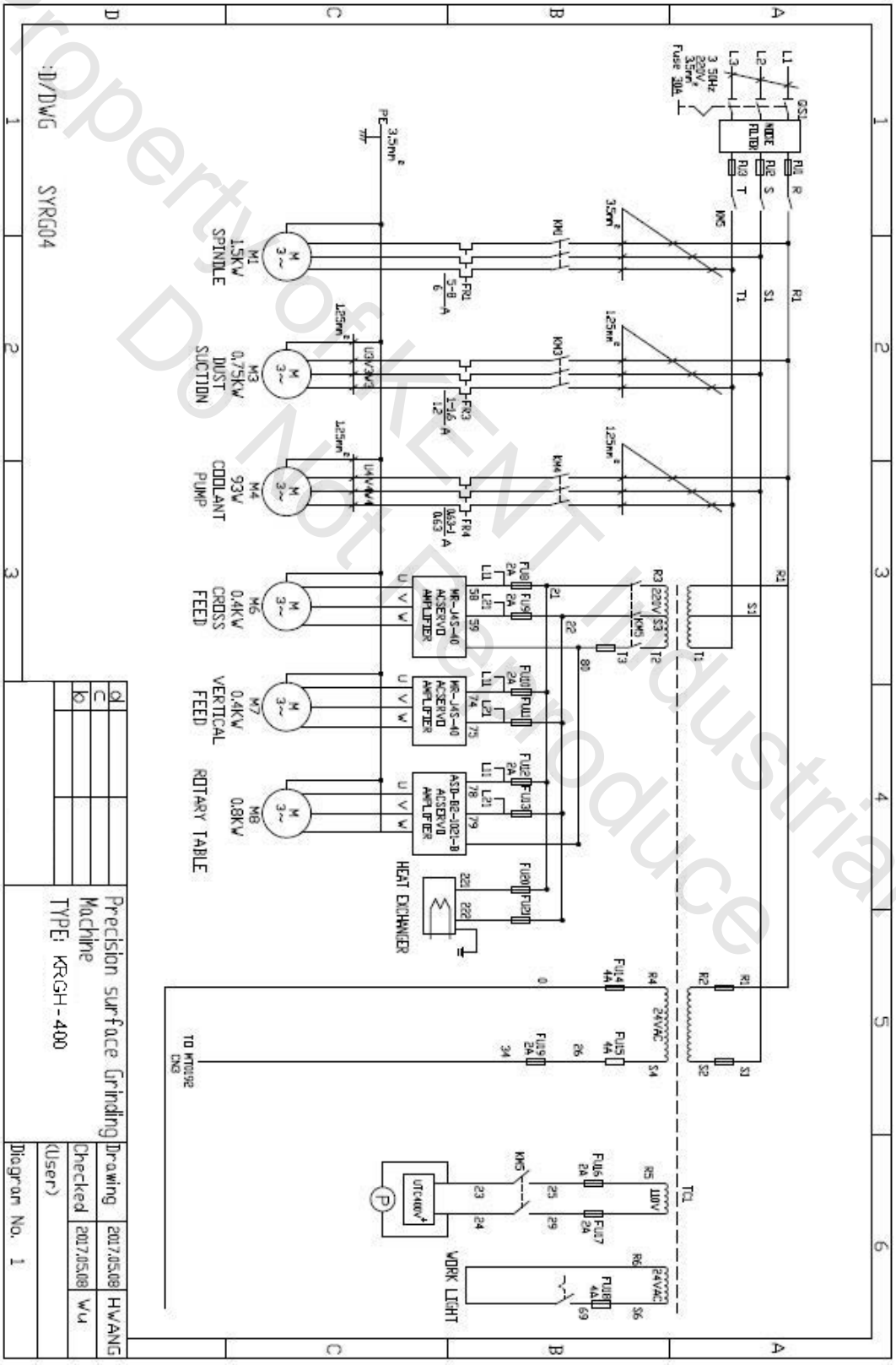
Type of trouble	Probable cause	Suggestions for correction
Patterned scratches	Dressing	* Uniform dressing feed of diamond tool * Smaller wheel dressing amount
	Overhead type dresser	Readjust the alignment of tank
Irregular scratches	Dirty coolant	* Cleaning of coolant tank * Replacement of coolant to new one * Cleaning of inside surface of wheel guard
Rough finishing	Dressing	* Slower dressing speed * Uniform dressing speed * Use table type dresser instead of overhead type dresser
	Grinding condition	* Smaller down-feed * Smaller cross-feed * Increased spark-out times
	Unbalance of the wheel	Balance the wheel
	Selection of the wheel	Use finer wheel
	Wear of wheel spindle bearings	Replace to new bearings
	Inadequate installation	Check the leveling bolts are rested securely on the leveling plates
	Table reversing shock	Adjust the tarry valve on the front of the machine

9 Messages and Solutions of Error Codes

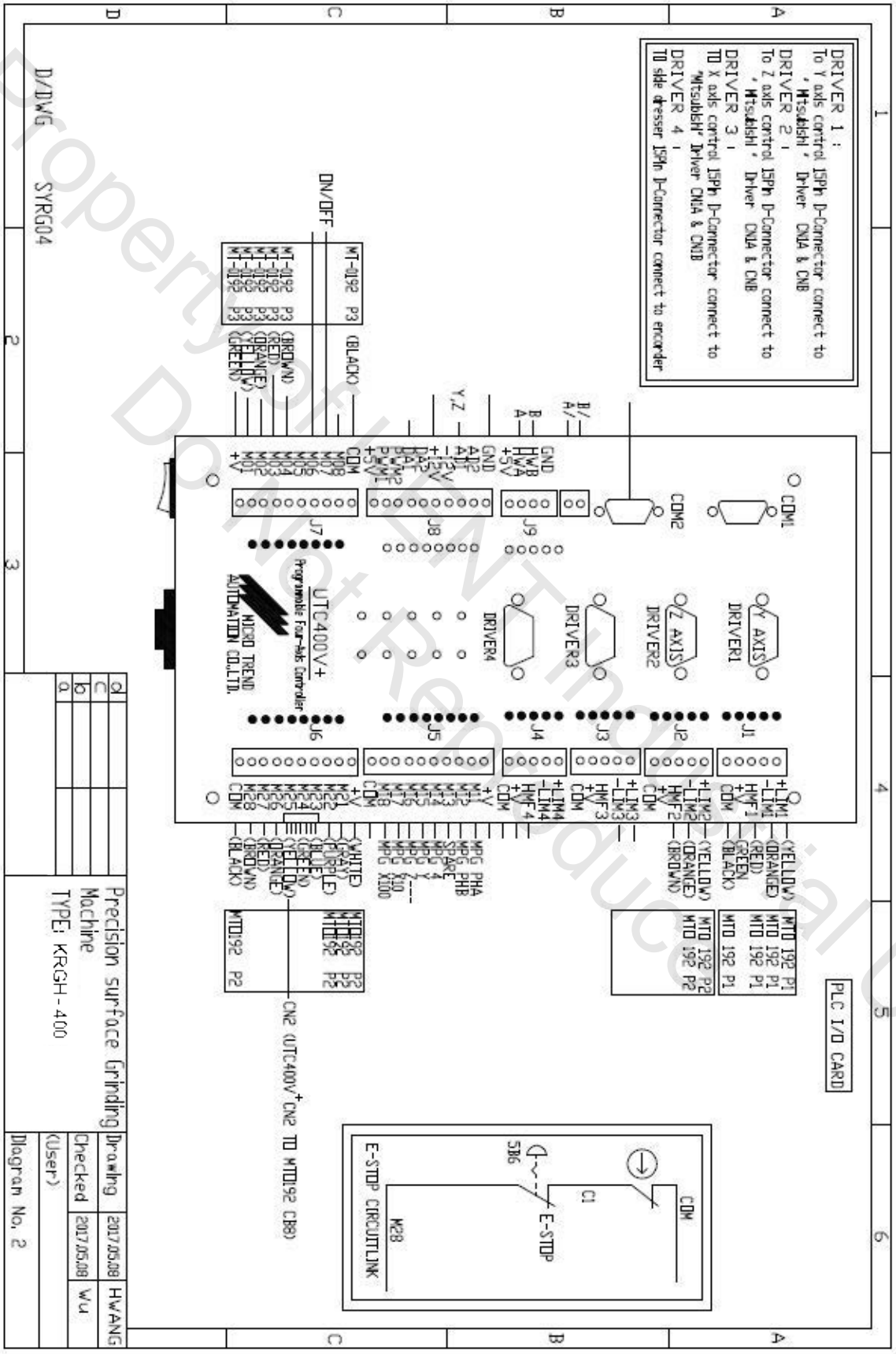
00: No Error Message
;01:Y Driver Fault
;02:Z Driver Fault
;03:Liquid Low Level
;04:Y Over Limit
;06:Magnetic Interlock
;07:Continuous Downfeed Error
;10:Cross Range Wrong Setting
;11:Lubricant Problem
;12:ESTOP Button Locked (M28)
;13:Wheel Not Yet Started
;14:Please Do Homing First
;15:Inverter Warming Up
;16:Over limit
;21:Y Linear Scale Mis-match
;22:Z Linear Scale Mis-match
;23:Y Following Error
;24:Z Following Error
;51:Down Key Locked, Press C Key First
;52:Cross Range Setting Wrong Sequence
;56:Cross Range Setting Not Allowed
;57:Mode Change Not Allowed In Auto-Cycle
;58:Start Key Only Allowed In Zero Position
;59:Not Allowed To Set Zero
;60:Not Allowed To Start At Error Condition
;61:Please Digitize Diamond Position
;62: Press "C" Key Before Start

10 Circuit Diagram

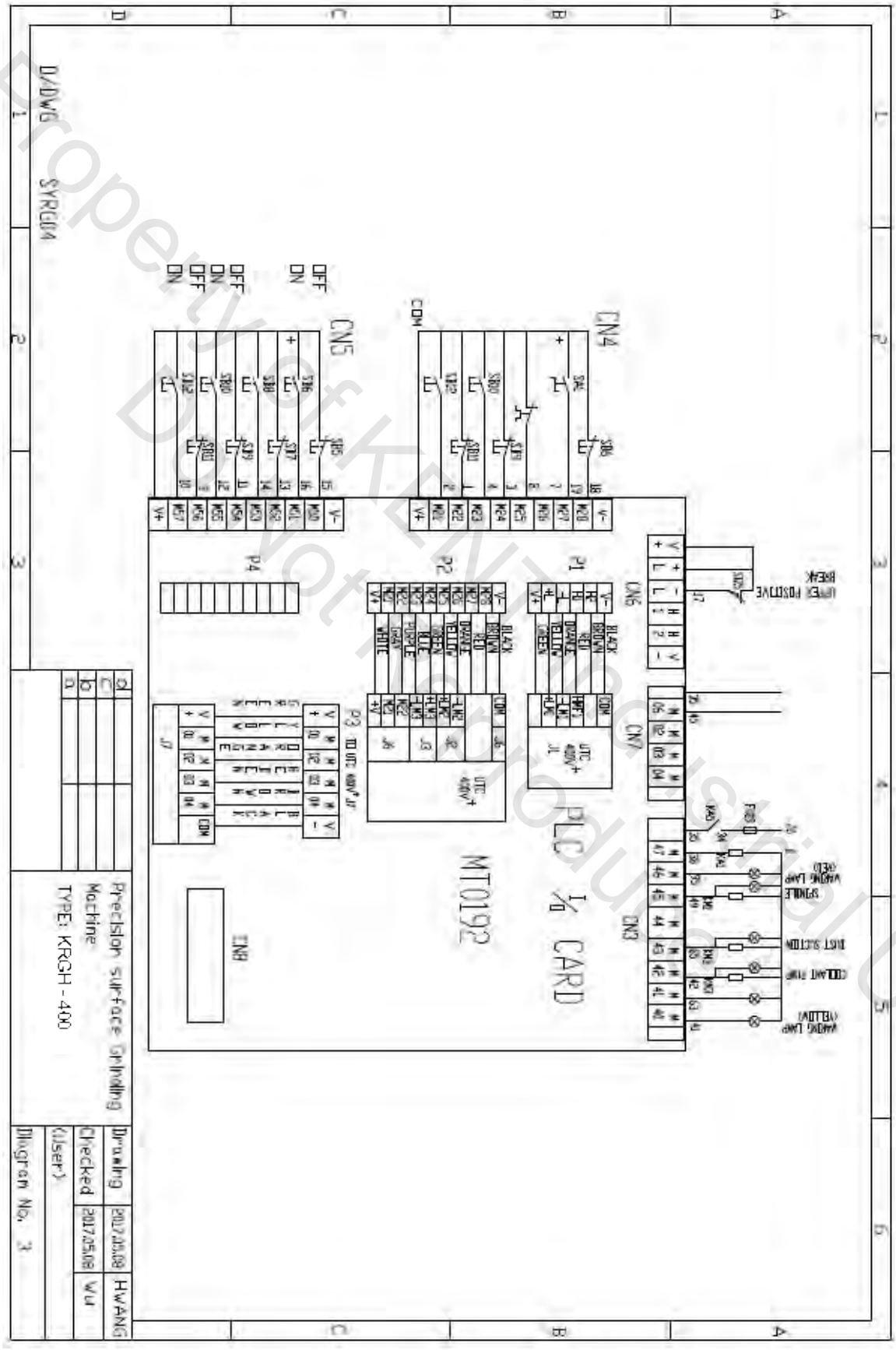
KRGH-400 -01



KRGH-400 -02



KRGH-400 -03



KRGH-400 -04