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The Safety Labels

1.1 Warning label of voltage.

- Mind the danger of electric shock by the high voltage.

- Touching the electric parts can cause burning, injury or even death. Make sure turn off the power before operating or maintaining the system.

1.2 Please read the manual carefully before operating the machine.

- It is advisable for the users to read the manual completely before operating or maintaining the machine for there are possibilities of injuries, fatal safety accidents or damages to the machine, part and the equipment due to the user’s lack of understanding about the operation and the maintenance.

1.3 Please wear safety glasses and gloves.

- We advise the users to wear safety glasses and gloves before start running the machine because there are dangers of splattering of fluids and alien substances while machining.
EMO Operation Procedure

Explanation about the switch and the EMO (Switch off the power in emergency situations).

*Attention*

Please do not touch the machine’s surface by hands or other objects in the events of emergencies, although the operation will be stopped and the breaker inside of the machine’s cabinet will be powered off by operating the EMO and the interlock switches, the machine and the parts will still be energized.

- Please read this manual carefully to learn about the EMO (Emergency Off) switch’s position and the method of using it before running the machine.
- Please be prepared for any possible safety accidents by regularly checking the EMO switch’s availability.

1. The steps of using the EMO switch.

2.1 Press the EMO switch when a hazardous signal is noticed, the machine will be stopped operating once the EMO switch is pushed on.

2.2 After pressing the emergency stop switch, the switch will be in recessed position. This will prevent the machine from being switched on.

After removing the hazardous elements, turn the EMO switch to the right direction, the switch will come out for the user and the equipment will be ready to power on.
2. **Warning on installing the equipments.**

- Please do not install machine as following conditions. (Risk of electrical shock, fire, and damage to equipment)
- Avoid installing and using this machine near flammable gas and humid place.
- Avoid a place near flammable materials.
- Avoid dusty Place for installment.
- Avoid place of flammable gas.
- Avoid outside place that easy to rust.
- Contact us before using this machine near extreme vibrations.
- Read and understand this operators’ manual before using this machine. (There is a risk of electric shock, personnel injury and damage to equipment)
- When you maintain the section supposed to be energized and carry current, make sure that the system power is turned off. Turn the electrical power off before servicing machine.
- Follow directions when connecting power.
  - Do not bend or pull the power cables and electric cables abnormally.
  - The Machine must be installed on the ground. When the machine is touched by hands, a ground connection must be installed and make sure that it’s set on the ground by using a protective earth terminal.
  - Do not operate the machine when the power cables are exposed.
  - Turn off the main power when an interruption of the power supply occurs or overheating protection is running.
  - Do not touch the terminal of the controller for 30 seconds after turned off the power.
  - Do not operate the machine over its control limits.
  - Do not touch the machine with wet hands
  - Operate the machine after installing a cover not to touch the rotating parts.
  - Turn off the main power whenever any problem occurs.
  - Do not touch the work-piece, spindle module and electrode while driving (there is a risk of electric shock)
  - Please contact with an expert when installing the machine.
- Please contact your distributor or manufacturer when installing the machine in over 10°C~+40°C temperature environments.

4. The Warranty of the machine and the causes of exemptions.

The applicable scopes for the equipment’s warranty are as follows:

4.1 Yougar M&T Inc.’s liability is inapplicable if damage to the product is caused by natural disaster, alteration to the product without Yougar M&T Inc’s consent or improper use of the product.

4.2 Yougar M&T Inc’s equipments are planned and manufactured for general industrial use. It’s inapplicable for any use for effecting on life or property.

4.3 Yougar M&T Inc. guarantees that the product is free from defects in the materials and workmanship for a period of 1 year after delivered to a specified location.

4.4 Please discuss with us regarding the usage and the environment to operate.

4.5 Yougar M&T Inc. guarantees that the product will be free from defects in materials and workmanship for a period of 1 year after delivered to a specific location.

4.6 The warranty is restricted to the repair of the machine itself and includes the software upgrades.

4.7 This warranty does not apply to the consumable parts and failure or damage caused by improper use of unauthorized service.

4.8 Yougar M&T Inc. guarantees the supplied equipment for a period of 1 year after delivered to the appointed place.

4.9 The product's warranty and the causes of exemptions

5. The exceptional cases for the warranty
(The following cases are excluded from the scope of the warranty.)

5.1 When the life of machine’s part is ended and the product is expendable.

5.2 Using or handling the machine in improper conditions or environments where are not set by our catalog or additional details of the specifications.

5.3 Damages caused by the user’s carelessly handling of the machine.

5.4 Damages caused by using spare purchases from other suppliers not authorized by YOUGAR.

5.5 Damages caused by modifications or repairs not authorized by distributor or YOUGAR.

5.6 Damages caused improper use of the machine than is not outlined in this manual.

5.7 Damages caused by unpredictable scientific and technological reason on delivery.
5.8 Damage caused by natural disaster.

The above conditions are restricted for domestic sales and the trades. Please contact with your agency for overseas sales and the trades.
1. The dimension and the specification of YGS-43C
<table>
<thead>
<tr>
<th>Specification</th>
<th>Specification Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Work piece Weight</td>
<td>500 Kg</td>
</tr>
<tr>
<td>Table Travel of X Y</td>
<td>400 * 300 mm</td>
</tr>
<tr>
<td>Z Axis Travel</td>
<td>400 mm</td>
</tr>
<tr>
<td>W Axis Travel</td>
<td>400 mm</td>
</tr>
<tr>
<td>Machine Dimensions</td>
<td>1500<em>1400</em>2000</td>
</tr>
<tr>
<td>Machine Weight</td>
<td>650 Kg</td>
</tr>
</tbody>
</table>
2. Procedure of removing the packing box.

1. The packed condition.

2. Remove the ceiling side’s board.

3. Remove the front side’s board

4. Remove the rear side’s board.
5. Remove the fixed support

6. Remove the left side’s board

7. Remove the right side’s board.

8. Remove the plywood underneath by using a hand pallet.
3. Method of moving the YGS-43C.

3.1 We advise to use a hand pallet or a folk lift to move the machine.

3.2 Below images show the proper way to move the equipment by using a pallet.

3.3 The above image shows the proper way to move the machine by using a pallet.

Please do not move the machine by lifting up the upper part with a rope or a chain. Also, using a crane to move the machine can cause fatal damage to the machine.
4. Removing the clamping block from Z and W axis

- Clamping work is required to prevent the machine from damage when you move the machine.
5. **How to remove the clamping block from X and Y axis.**

- Please move the X-axis and the Y-axis’s tables by pulling out the hidden clamping bolt in the X and Y axis
- Check the clamping bolt in the SUS table and the column by slightly lifting up the acryl cover installed in the upper part of the table.
Hold the nut on the back side and release bolt at forth side.
6. Method of setting the horizontality of YGS-43C.

6.1 Prepare the required tools at hand after placing the machine in an arranged place.

**[The required tools]**

- 30mm open end wrench (spanner) (1pc),
- Precision level (1pc) (Please refer to the 2-4 images)

![Picture 2-4, 30mm of open end wrench (spanner) (left) and a precision level (right)](image)

6.2 Check the water drop’s position after placing the precision level in the X axis of the table as demonstrated in the image 2-5, and if the water drop is slanted to one side, the machine will have been installed higher to that direction.

![Image 2-5, using the level gauge](image)

6.3 The machine’s height will get lowered when the level gauge is turned in a counter-clockwise direction.

Adjust the horizontality of the width direction by looking at the water drop’s position and set the machine’s leveling.

![Image showing level adjustment](image)
7. Method of adjusting the level (the horizontality) (The front and back sides)

7.1 Check the water drop’s position after placing the precision leveling in the horizontal (height) direction.

7.2 Place the precision level on the Y axis’s table as shown in the picture.

The image 2-7 shows checking the machine’s level.

The Image 2-8. Checking the water drop’s position.

7.3 Please check the machine’s slope by looking at the water drop’s position. If the water drop is slanted to one side that means the equipment will have been installed higher to that direction. Image 2-7. Checking the water drop’s position.

- Adjust the leveling legs in a clockwise direction
- The machine’s height will be shortened.
- Adjust the machine’s front and back sides by looking at the water drop’s position
8. Method of connecting the electrical power with YGS 43C.

8.1 Separate the PG connector from behind of the machine by turning in a counter-clockwise direction then insert the power cable inside of the connector cover.

The image 2-8 shows setting by rotating the level gauge.

The image 2-9 PG connector

8.2 Connect the electricity supply (4㎟ * 3P) to the terminal case on the cover

8.3 Connect the cables to each position by opening the terminal block’s cover after inserting a cable in the equipment.

※ L1, MP = Ø2. 220V 3Kw

PE = Earth (Ground Connection)

Connect electricity supply (4㎟ * 3P) with the terminal case on the cover.

- Single phase 220V 3Kw
  ※ L1, MP = Single Phase 220V 3Kw

- PE = Earth (Ground Connection)

After inserting the cable inside of the machine, connect the power cable with the terminal case.

The Image 2-10, Image of completed connecting the cables with the terminal cover
1. Setting the machine’s power supply.

- Switch on the main power.
- Turn the main power switch in a clockwise direction.
- Turn on the “Re-set switch” at the beginning of connecting the power.
- Turn the main switch in a clockwise direction in the condition of the door is closed.
- When the reset switch is pushed, the system’s switch will be turned on.
- Turning the button in a clockwise direction will make the button come out and the switch will be turned off.

Push the machine’s power switch to supply power to the machine.

※ When the overheating sensor is running, the power may not be supplied to the machine.

The machine will be ready for processing.
2. The structure of the water tank

2.1 Open the water tank parts by gripping the left side’s handle, pulling it upward and drawing the water tank parts.

2.2 Please mind your hands not to be injured when you pull out the water tank doors.

3. The names of the water tank’s inner parts.

3-1 Waste water inlet flow
3-2 Waste water tank
3-3 Water level sensor
3-4 Clean water tank
3-5 Clean water filter (YGSF-330)
3-6 High pressure pump
3-7 Sub pump
3-8 Ion pump
3-9 Filter pump

Fill with water until two-third level both in the clean water tank (A) and in the dirty water tank (B)
3. The High Pressure Pump

- The remote control’s high pressure pump should be turned on. Please do not insert an electrode bar in the spindle part.

- Expel the air – turn the valve (A) in a clockwise direction and expel the air. (Expel the air completely for 5 minutes)

- Repeating locking and unlocking the air emission valve several time will make easier to emit the air.

- If water doesn't pump well when setting the machine at the beginning, please lock the piston valve cover after slowly pouring some water into the pump while unscrewing one of the piston valve covers by using a 22mm spanner.

- Pour water into the pipe when the high pressure pump is on.

- When pressure is formed, turn the needle valve in a clockwise direction and set it up to 50 bars.

The Needle Valve
1. The formation of the main screen.
2. The Coordinates.

2.1 Display of the current coordinate.

This shows the program’s coordinates. The user will be able to modify the saved values by clicking on the value of each part.

2.2 Display of the machine’s coordinate.

This shows the YGS system’s absolute coordinates. When origin return is completed, all the coordinates will become “0” value.

- Please be advised that the machine’s coordinates cannot be modified by the user.

3. The Graphic

3.1 It displays the currently loaded NC program’s graphics.

3.2 The NC program’s illustrations (Explanatory notes)

* Operating block-yellow color.
* Work completion Block- Red color
* Skip block-White color
* Dry run block-Blue color

3.3 Method of operating the Graphic.

* Enlarge/Reduce: After clicking on the graphic screen, scroll the mouse wheel.
* Shift: Click on the graphic screen and use the keyboard button (Up down and left right sides)
* Full Screen: Double click on the graphic screen.
4. The machine’s state and the mode.

1.1 The condition marks.

Remaining Depth – It displays the remaining depth of a hole on processing.
Most Depth – It displays the depth of a hole currently on processing.
Mirror & Exchanger Status – It displays the state of functioning.
Tilt: It displays the value of the auto rotate angle

Electrode

Thickness – It displays the pie (mm) of the tube to be processing.
Tube length - It displays the length of the electrode bar in use.
Material - It displays the quality of the work piece.
Consumption – It displays the attrition rate of the electrode bar.
ION - It displays the value of present ION.

Blind Hole Parameter

El~ Change X, Y

It designates the location for a work piece’s upper touch when exchanging an electrode bar.

This blind hole parameter sets the coordinate to touch the surface.

Check Blind[%] - It displays the processing rate of a distance for the targeted thickness in a primary measurement. Generally, it’s generally set between 70% and 80%.

Accuracy [mm]

It displays the level of tolerance for the accuracy.

Switches

Inch (MM) <-> M/M
It displays the units in use.

AEC Enable
It displays AEC’s availability.

Automatic reset of Z-Axis

-It displays the availability of the automatic reset function of Z-Axis.

Door Sensor
It shows the availability of the door sensor.

M00 Enable
It shows the availability of M00 function.

Start Point Auto Zero
It displays the availability of the function to make the starting point’s coordinate to be at 0.000 automatically.

PG Homming
It displays the availability of the function to return to the origin starting return point after completed processing NC program.

E Code Enable
It displays the availability of the E-Code.

E.g.) it’s a function of detecting “E0000” in the NC_Data and automatically changing it to the relevant E-code value.

It displays the availability of the function of moving the W axis.

It displays the availability of marking numbers on holes.

Display Hole Number
It displays the order number of each hole on the graphic.

※ Functions in use will be shown in Red and not in use will be shown in Black.

5. Inputting E-Code (Parameter)
please press the Enter Key after modifying the EP data (the value won’t be changed unless press the enter key).

Zs
It’s the value of setting the deepness to process (If the Zs value is not inputted by the user, unable to process).

Zup
It’s the value of the returning distance after processing the electric discharge.

After processing each hole, it moves to the position of the inputted value.

W Esc
It returns to the inputted value set by the user after processing each hole.

E-No
E Code

On <1 ~255>
Arc sparking “on” time (1 ~ 255)

Off <1 ~255>
Arc sparking “off” time (1 ~ 255)

IP <1 ~36>
The level of the peak current’s discharge. (1-36)

VG <1 ~255>
Setting the voltage difference between the tube and the work piece
(Targeted processing voltage)
As the value is inputted high, the pole’s voltage will get increased and the speed will get reduced.

SV <1 ~255>
The speed of Z-Axis’s servo motor.
If the value is set high, the speed of servo motor will get faster but the hole won’t be processed stably.

Cap
The Auxiliary discharge power (capacitor) <Option>

HP
Pressure of High Pressure Pump (level 1~9)

Set –It modifies the current processing condition (It does the same function of the Enter Key).

6. **Explanation about the E-Code.**

**ON** – Time that arc sparking is on.
Specify the time of occurring arc flame.
Increasing the value will raise the voltage and the processing speed will get faster. Meanwhile, if “ON” time gets longer, it will increase the consumption of electrode also will enlarge the hole size. It becomes the cause of expansion of processing holes.
The setting level is (01~255).

**OFF** - (Time that arc sparking is off.)
Interval time of arc-discharge (OFF TIME)

If the value is set high, the voltage will be reduced and the speed will be slowed down, but the voltage will be stabilized.
The setting level is (01~255)

![Diagram showing ON and OFF time intervals]

**IP** - Electric current value of the peak discharge
It displays the intensity of the electric current in the spark arc
If the value is set high, the voltage will be increased and the speed of processing will be faster. But, if “ON” time gets longer, it causes faster consumption of electrodes and makes the size of a hole bigger.
The setting level is 01~36.

**VG** - Setting voltages between the poles. (Targeted processing voltage)
It shows the voltage between the electrode and the work piece
If the value is set high, the voltage of processing will be increased and if the value is set low, the voltage of processing will be decreased.
The setting level is (01~255).
SV - The speed of Z axis’s servo motor.

Federate Speed It displays the speed of Z axis’s servo motor on processing.
When the value is inputted high, the speed will be faster but the voltage of processing may not be stabilized.
The setting level is 01~255.

Cap - Auxiliary discharge power (Capacitor) <option>
If auxiliary discharge power is required while processing, use this function.
The setting level is between 01 and 16.

HP - High Pressure Pump
It controls the level of pressure in the high pressure pump.
If the value is set bigger, the pressure will be stronger and the speed will be faster. But, the electrode bar can be bent.
The setting level is between 01 and 09.

7. Options for the functions.

Power (supply)
Machinery power supply

Inch
Inch / MM
Displays the state of Inch/MM.

Ion
It displays the state of the Ion pump’s operation.

NC states
It displays the state of a drilling – processing, paused, finished

Blind Hole
It’s the function of processing a hole according to the depth inputted by the user.

Tilting
The lamp will be lightened up when the angle rotate is turned on
ERR Reset
It clears error messages

Dry Run
It checks the transfers of the X,Y,W,Z,A,B,C-axis according to the program without processing

SKIP
After paused to process a block on processing for temporary, process the next block.

Single (S Block)
Stop after processing the current block.

Contact
The lamp will be turned on when the tube and the work piece is contacted.

Start
Starting the electric discharge

8. Menu Button

NC-Reset
-Reset the currently opened program.

-Click the left mouse button 3~4 times quickly

Program
-Converting a DMX file to a NC file.
-Graphical representation of the Mirror.
-Edit, save and create a NC_Data.

Setting
Touch a function required for a work piece’s setting.
Return to the origin point and set the coordinate system. (G54 ~ G59)

Parameter
The AEC control and set the machine’s parameters.

Work Offset
G54~G59 setting the coordinate system, change the electrode bar and the remote control (pendent box)’s positions
**Spindle CW**
Control button for spindle circulation direction.

**Spindle Rotation**
Spindle Rotation On/Off

**Flush**
High Pressure Pump On / Off

**Flow**
Sub Pump On / Off

**Buzzer**
The buzzer will ring when the tube and the work piece are contacted.

### 9. NC Program

The NC program is displayed as the image shows in the right side.

- G90 – The absolute coordinate system
- G92 – Setting the coordinate system
- G54–G59 – Move to the already set coordinate system’s origin return point. G00 – Transfer the coordinate G11 – G00 + G01 Transfer coordinated and start Spark Erosion.
- E9107 – call parameter M00 – Pause temporarily
- Z15 – The depth to process (Moving distance of the Z axis = Zs)
- L25 – The blind hole’s depth to process (set the default processing ratio=60%, the initial attrition rate 100%)
- T01 – Replace an electrode bar

### 10. The Menu Buttons (Full Down Menu)

- **Position**
Mark the coordinate’s value largely

- **Parameters**
  - Pitch Parameter
  - Motion Parameter
  - System Parameter

### 11. Status Bar

It displays the total quantity of blocks to process and the numbers of blocks remained shown on the screen, it also displays the error message and the program version.
12. Blind Hole

The screen formation
13. **Explanation about the functions**

Manual Type – Choose the touch direction mode on processing a blind hole

ABS Measurement – It measures only by touching the inputted coordinates in the all holes when processing.

Parameters – blind hole will be processed only when the check box is marked.
Electrode size - Ø0.3 ~ Ø 3.0 Choose an electrode (An electrode selection).

The targeted thickness[$t$] – The targeted distance for a work piece to process.

In general, the range is set between 70 ~ 80%.

The rate of initial consumption - The rate applied to the initial processing.
In general, 100% of value is set.

The touch speed– The speed to touch the upper surface of a work piece (0~9 Steps)
In general, level 1 is recommended for setting.

Error – Select the level of tolerance for the accuracy of processing.
If the error range is small, it will take more time to process (machine). (±0.1 ~ ±0.5 5 steps)

Measurement Result – It displays the result of the processing measurement.

Result of replacing a manual electrode – It displays the value of the remained distance’s result for the targeted thickness when processing blind holes by replacing a manual electrode.

Result of auto-change electrode- It shows the balanced depth of target when auto change electrode is on processing blind holes.

Replace the manual electrode bar - while processing holes, press the AEC button on the Remote control.

Click on the AEC_TEST button in the System Parameter
14. The Work Offset

Select the coordinate system  
Returning to the origin point,

Shift coordinates  
Setting 0 for the coordinate

The remote control function
1. The Setting

The Screen Formation

It includes various functions required to set the work piece.
2. Touch – Touch the one side

Press a button for a direction to move.
Inside touch (2P) - Searches for the center of the inside surface of a work piece. Shortening

Select the Inside Touch - Click on an axis to find the center (X or Y)

Inside Touch 2P
It searches for the center of the inside surface of a work piece. Biaxial

Select the Inside Touch.
Click on an axis to find the center. (X and Y)

Inside Touch 4P
Select the inside touch.
It searches for the center of the outer surface of the work piece. (X and Y)
**Outside Touch 2P** - Searches for the center of the outer surface of a work piece. Shortening.

Select the Outside Touch. Move the distance (X-axis or Y-axis)
Input (enter) the distance to traverse rapidly (quickly).
Click on an axis to find the center. (X or Y)

**Outside Touch 4P**

Searches for the center of an outer surface of a work piece. Biaxial.
Select Outside Touch
Move distance (Both X and Y axis)
Input (Enter) distance for rapid traverse.
Click on the axis to find the center (X and Y)
3. **Outside Corner**

X - distance – The X-axis’s distance to move from the vertex.
Y - distance – The Y-axis’s distance to move from the vertex.
Click on a direction button to search for

(Eg) It’s a case of looking for a third corner.
4. **Automatic Angle Rotate**

Measure the angle of a work piece.

After placing the electrode bar in a work piece’s side, click the direction button to measure.

**Main Axis**
Select the main axis to move for measurement

**Distance**
Input (enter) the distance to measure
Please enter the code following (based on) the direction.

**Angle Compensable**
Select the axis to measure an angle

**Tilting**
Display a work piece’s angle after measured.
5. The origin return

It detects the origin return of the machine.

Click on the “Origin” button

All Axis

It returns to the origin of all the axes (With the Rotary Table).

Start
It’s a button to function the origin return.
Setting the coordinate system to use
Click on the “Work Pos” button.
Select the coordinate system to use
It displays the coordinate system selected on the current coordinate (G54~G59).
6. The program

6.1 The screen’s formation.

Selected hole data extract from

Menu button

File name already read

DXF file

Graphic.

Program contents

Repeat hole display after DXF change.
6.2 Reading NC program

Please follow the procedure when you read a NC program.
Open a NC file – select a file – check a NC data first and then a graphic.
Please refer to the following image
Wire Pgm – It checks when it reads (detects) the NC-data of the Wire Cut EDM.
6.3 Converting a DXF file

- Convert a processing drawing of selected DXF file from the Auto Cad and use.
- Modify drawing from CAD
- Prepare a CAD’s drawing
- Check the product’s standard point – 0.0 point.
- Delete all the Cycle except a spot to process (machine, burn)
- Add a point on the spot to process.
- Save in DXF form. (The version is AutoCAD 2000, 2004)

* We advise the user to add the starting point of the machine first.

- If a cycle to process is cut or divided, it will recognize the cycle as much as divided.
- Delete all the points in advance except the spots to process.
- If you have drawn a standard point on the drawing which was already drawn, please redraw after deleting all except the standard point.
6.4 Extracting a NC file from the CAD
If it’s already drawn to Cycle, 0.0 point will be the standard point of the product.
It will process drilling only the marked 12 spots.
Shift and insert the spot to process in the new sheet.

Draw a Cycle or a Point in the 0.0 spot (The standard point of the product)
Copy the spot on the existing drawing to process by using the datum (Standard) point
Paste in a new sheet by using the standard (datum) point.
Save in DXF form. (The version is AutoCad 2000, 2004)

※ Attention※

- In case of processing the starting point of a product, draws a cycle or a point overlapped.

- The processing step is same as the drawing step.
Open a DXF file – Select a file – Check the NC Data already extracted, convert the NC file – Save the NC file – Check the graphic. (Please refer to the following images)
6.5 Drawing NC (Inputting manually using a simple program)
This is used for making the simple NC programs less than 10 pieces.
### 6.6 The E-code (EP Data)
The screen’s formation

<table>
<thead>
<tr>
<th>No.</th>
<th>E-code</th>
<th>Process condition</th>
<th>Add/Modify/Delete</th>
<th>The requirement of machining</th>
</tr>
</thead>
<tbody>
<tr>
<td>901</td>
<td>960</td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>902</td>
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<td>905</td>
<td>964</td>
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</table>

**E-Code: Requirement of Yougar**
7. **The functions.**

Search – Searching for the requirements to process based on the work piece’s quality.

There are SKD-11, AL, Cu, WC, BS … …qualities provided as standard.

The list of qualities will be displayed by clicking on the arrow as shown in the image.

8. **The list of E-Code**

As the below image shows, retrieving a quality will show the list of requirements for processing. Clicking on the E-Code number (left side) will pop up in the Add, Modify, Delete (right) side.

Ecode List – Yougar cannot be added, modified or deleted
9. **Attach/Modify/Delete**

Condition Lock – The E-code is not amendable once it’s set.
Add - Create new requirements for processing.
Delete – Delete the current requirement permanently which is displayed on the screen.
Modify – Modify the current requirement which is displayed on the screen.
Clear – Clear only the currently displaying marked requirements on the screen.

10. **Set to Condition**

Apply the currently displayed e-code on the main screen.

The functions to add, modify and delete are only allowed for the user’s requirement.

※ **Method of attaching and deleting a quality.**

The “material.txt” file can be edited by using a notepad in the “C: \ EDM_Para \ Parameters \” folder.

* The numbering system of the E-Code.

For example) the distinguished number for Yougar (0~8 specify the user)

The codes for the qualities (SKD-11, AL, Cu, WC, BS)
The thickness of the electrodes (Ø0.3 ~ Ø 3.0 → 03 ~ 30)

※ **The value of Ep-data will be applied only if the time interval (sec) and the depth of insert (mm) are satisfied.**
11. The parameters.

The screen formation.

1. AEC sensor
2. AEC operation
3. AEC parameter A
4. AEC parameter B
5. Machine parameter A
6. Machine parameter B
7. Machine parameter C
AEC Parameter A

- AEC sensor
The lamp will be turned on when the AEC Unit’s each cylinder is operated.

The AEC operation part
It operates the AEC unit’s each cylinder.
  - It’s used when testing AEC repeatedly.

The location of replacing a tube
It’s the Z-axis’s location where the transporter replaces an electrode.

The starting point of the AEC
It’s the Z-axis’s location where an electrode becomes the shortest on machining.

The waiting time of AEC
It’s the duration of the Z-axis reaches to the spot where an electrode gets replaced and be on standby.

A tube’s length: not in use.

The thickness of a work piece
Input the thickness of a work piece.

Change the language.
Korean, English, Germany, French, Chinese and Japanese are supported.
- Converting M/M – mm/inch unit
- AEC Enable
  Select Y/N for the use of AEC
- The Z axis’s automatic return
- Center touch before Work
  Measure the center of a work piece before processing
- Z-Axis touch before Work
  It’s a function to touch the upper side of a work piece before processing
- Door Sensor
  Select Y/N for the use of the door sensor
- Use of M00 - Select Y/N for the use of M00
- Setting the Start Point at Zero
  Select On/Off to set the program’s start point to ‘0’
- P.G Homing after Processing
  It’s a function to return to the program’s starting point after completed a processing.
- W-Axis Move to Escape
  Select Y/N for the use of the function to shift to W-axis.

Machine parameter A

Setup the use of a butcher Pump mode
Automatic On – The high pressure pump repeats on and off when drilling the each hole.
Automatic Off – When machining the first hole, the high pressure pump becomes “On” and changes to “Off” when the machining is completed.
Water Sensor (N-O)
It’s a sensor that detects the water level in the water tank

Machine parameter B

Setting the Ion’s value
The value is set to reduce the value of ionizing the water.
Controlling the ion. It’s the value to control the Ion sensor’s measuring error.
Buzzer after Processing
the buzzer will be ringing when NC is completed processing
(Sec) 1 = 1Sec
Machine parameter C
Current slope of the IP
In order to minimize the ber on processing, please gradually raise the processing level.
The interval of the time
Apply the Ep-data’s value which was set after the time was arranged.
The depth to insert.

The Ep-data’s value that was set after processing the arranged depth will be applied.
The Ep-data’s value set after matched with the interval of time (sec) and the depth to insert (mm) will be applied.
12. The names of the AEC

- AEC operate unit
- Transporter rotation part
- Spindle chuck
- Index origin sensor
- Index gripper
- Transporter Gripper
- Index tube sensor
- Transporter arm sensor
- Tube pin.
13. The solenoid valve’s position and the transporter unit’s movement.

SD-2: Transporter rotation part

SD-4: Transporter gripper

Air solenoid valve

SD-3: The Transporter Arm.

Indexer Gripper
Transporter Rotate
Transporter Arm Push
Transporter Gripper
Spindle Chuck
Tube Pincers
Indexer T-Gripper
14. Adjusting the angle of the transporter rotate

[HOME POSITION]  [CHANGE POSITION]

Adjust the transporter’s home position
- Operate the transporter rotate
- Adjust the transporter home location by unfastening (unlocking) or tightening the first bolt.
- Adjust the transporter’s replacing location by releasing or tightening the second bolt.
- After adjusting the each part, make sure that the nut is fastened tightly by using a nut.

2. Adjust the transporter’s replacing position
15. Adjusting the position of the transporter arm.

Control the front and back sides’ position by using the 4 bolts.

16. Adjusting the indexer gripper’s position.
- Push the indexer zero return button
- Check the zero return
- Push the indexer gripper movement button
- Check the movement of the gripper

When the gripper’s movement is unstable, adjust the return sensor’s position by using the return sensor’s captive bolt.
17. Adjusting the indexer position.

The assembly indexer’s position can be adjusted by using the four bolts shown in the picture.

- Locate an electrode in the indexer gripper
- Operate the transporter arm.
- Check the condition of the transporter gripper’s current movement.
- Leave the captive bolt unlocked.
- Adjust the indexer position by moving it back and forth.
18. Adjusting the indexer gripper’s position (Manual).

The electrode should be installed in the indexer.

- Push the “INDEXER GRIPPERS” button.
- Check if the manual gripped is opened after come down
- If the gripper is not opened smoothly, adjust it as below.
  - Release the fix bolt.
  - Adjust the position by moving the gripper block to the left and right sides.
  - Fasten the fix bolt.
19. The AEC panel parts.

1. Transporter Gripper Pressure Valve
2. Tube pincer
3. AEC operation lamp
4. Spindle Chuck
5. Indexer Gripper
6. Indexer rotation

Transporter Gripper Pressure Valve – it’s generally set at 4MPa

TUBE PINCER – Turn on/off the electrode guide that is installed in the right side of the spindle.

LAMP – When the running an electrode is processed, it will be turned on.

CHUCK ON/OFF – It turns on and off spindle chuck cylinder.

INDEXER GRIPPERS – It turns on/off indexer gripper cylinder.

TOOL CW – If you push it one time, the indexer will be moved one step.

*Please do not push the button forcefully.

*Please do not use chemicals to clean the parts.
20. Method of using the Remote Control
1. Method of adjusting the vertical calibration

- Fix the 6Ø rod to the electrode guide direction.
- Install the indicator in front of 6Ø rod (X axis direction).
- Move X, Y axis and locate to the peak of 6Ø rod.
- Check the straightness by moving the W axis up and down.
- When you need to adjust the V axis as above, please use a V axis’s control bolt only.

<Attention>
- If you release the front bolt and tighten the rear side’s bolt, the axis will turn aside to V+ - direction.
- If you tighten the front bolt and release the rear side’s bolt, the axis will turn aside to V- direction.
- After finished fixing the V axis, please fix U axis.
- Install the indicator in front of 6Ø rod (Y axis direction).
- Move the X, Y axis and locate to the peak of the 6Ø rod.
- Move the W axis up and down and check the verticality.
- If you fix the U axis as above, please use a U axis control bolt only

<Reference>
if you loosen the left volt and tighten the right bolt, the axis will turn aside at U+ direction.
If you tighten the right volt and loosen left bolt, the axis will turn aside at U- direction.
- After finished fixing the V axis, please check the U axis and fix again.
- If you have fixed the U axis again, it is necessary to make sure the fixation of the V axis again for re-check.
2. The Electronic Parts

2.1 The overall appearance & Configuration
2.2 The Electric Circuit – Input Power supply.
2.3 The Electric Circuit – EDM, FET PCB Input & Output
2.4 The Electric Circuit – Motion PCB Input & Output
2.5 The EDM parts (The detailed formation).

It supplies electric current to the processing part by switching the discharge voltage.
2.6 Detailed formation of AC power part

- It gives power to each part of the circuits by receiving the single phase 220V.
2.7 Detail formation of SSR & TRANS

SSR1 – Discharge power On/Off
IN: 4–32VDC, OUT: 240VAC

SSR5 – Main Power On/Off
IN: 4–32VDC, OUT: 240VAC

SSR2 – Filter Pump On/Off
IN: 4–32VDC, OUT: 240VAC

SSR3 – Ion Pump On/Off
IN: 4–32VDC, OUT: 240VAC

SSR4 – Sub Pump On/Off
IN: 4–32VDC, OUT: 240VAC

[3500W Discharge TRANS]
Input 200~220VAC Output 35~80VAC

[350W DC Motor Driven TRANS]
Input 200~220VAC Output 9vac, 22VAC
3. Water Tank

3.1 Structure and Name
3.1.1 Waste Water Inlet
3.1.2 Waste Water Tank
3.1.3 The Water Level Sensor (Waste Water)
3.1.4 Clean Water Tank
3.1.5 Clean Water Filter (YGS F-330)
3.1.6 High Pressure Pump
3.1.7 Sub Pump
3.1.8 Ion Pump
3.1.9 Filter Pump

*Fill water up to the 2/3 point in the clean water tank (A) and waste water tank (B)

*Exchange the clean water filter when the filtering isn’t working well or the filter is broken.
3.2 Piping Diagram
3.3 Replacing the filter.

[Disconnect the coupling]

[Exchange the filter]

[Remove the nipple]

<Caution>

- We advise the user to wear gloves for safety when you disconnect the coupling or assembly,

- The electric power supply must be turned off when exchanging the filter.
3.4 Ion Resin

Block the system and the main power
Turn the ion resin tank to A direction and separate.
Empty the ion resin already used.
Fill the new ion resin up to the “Blue (Max)” line (less than 2-3).
Fasten the ion resin tank by turning to the B direction as shown in the image.

※ Replacement cycle: If the ion value is staying or going over 100 for a long time, the ion resin needs to be replaced.

< Caution >

※ after exchanged the ion resin, please assemble after clean the “O ring” side.

※ Please mind not to lose “O ring” when exchange the ion resin..
3.5 Structures and names of the high pressure pump parts.

- Pressure Control Valve
- Oil Inlet
- Pressure Gauge
- Piston Valve
- Inlet
- By-pass valve
- By-pass outlet
3.6 Maintaining the high pressure pump’s oil.

Turn the oil gauge in a counter-clockwise direction and take it out upward.
Clean the oil gauge and take out put oil.
After checked the oil level, if the level is under the “proper direction (Low ~ High), supply oil. You have to supplement the oil up to proper level (Low~High) of the oil gauge, or up to 2/3 level of the checking window.

※ Caution

① the oil must be used engine oil for diesel engine.
② the oil supplement should be carried out after stopping all the operations of the machine.

<Reference> The oil lever must be checked once in 3 months and please supplement or replace the oil.
3.7 Cleaning the high pressure pump

- If replacement of the filter gets delayed or continuously use the damaged filter can cause minor debris flow into the pump and high pressure may not be formed.

* Following issues can be occurred when the high pressure pump is not cleaned up.

- There can be serious change to the hydraulic pressure and noise in the pump.
- When the hydraulic pressure has changes in the pump, processing holes can be affected.
- If the pump is left with above issues for a long time, the piston inside of the pump can be broken.
- Regular replacement of the filter and cleaning of the water tank extends the pump’s life.
3.7.1 Method of cleaning the high pressure pump

[Prepare a 22mm of Money Spanner]  

[Release and take off the piston valve cap “1~6”]
[Taking off the piston valve cap]

[After removing the check valve, please remove the foreign substance]

[Check valve’s structure] -  [Caution]: Please pay special attention to the direction when assembly the parts.

How to checkup the reassembled parts.

① Remove the drill chuck from the spindle

② Turn on the high pressure pump by clicking on the “Flush” button.

③ Open the “B” by-pass valve turning to counterclockwise direction. (Remove the air for 30-40 seconds).

④ Lock the “B” by-pass valve by turning to clockwise direction. (Please do not use excessive force)

⑤ Please check the spindle part if water comes out.
4. The head parts.

4.1 The structures and the names.

- Spindle Motor
- Rotary Joint
- Rotary union adaptor
- Spindle Motor Reducer
- Rotary union adaptor
- Spindle Motor Pulley
- Fixing bracket
- Timing Belt (76XL)
- Spacer A & B
- Gear Box
- Spindle motor pulley
- 6002 Bearing
- Bushing seal
- 7002 Angular bearing
- Spindle Bearing Housing
- Bearing Housing
- 6804 Bearing
- Spindle Shaft
4.2 The spindle assembly diagram.
4.3 How to replace the neuron bearing and the O-ring.

[Take off the spindle cover]  [Remove the spindle motor]  [Remove the high pressure pump]

[Remove the Pulley]  [Remove the Shaft fix bole]

[Remove the carbon brush]  [Complete taking to pieces]  *

*When you replace the angular bearing, please check the direction sign. If not, there can be functional errors*
4.4 How to exchange the Bearing.

[Take off the spindle cover]  [Remove the spindle motor]  [Remove the high pressure pump]

Remove the carbon brush - Remove the pulley - Remove the shaft fix bolt

Remove the bearing housing and complete the disporting.

* Please refuel when exchange the bearing.

*.Please check the direction when you exchange the angular bearing for there can be a functional errors.
4.5 The Head Module (spindle motor part’s assembly) - 3D
4.6 The 3D Head Module (Spindle shaft, bearing assembly) – 3D
4.7 The 3D Linear Scale Part (Spindle chuck driven assembly)
**Is there any problem with your machine?**

please read the following articles before contact us.

(Here are frequently asked questions. Please read it through before operating the machine.)

1. The system is out of order,
   - Check the main power if it’s plugged off. (The machine must be on the ground)
     Check the main switch which should be turned on.
   - Check the EM-STOP S/W if it’s pressed.
     Release the push and turn on the power again. (Please refer to the Page 10)
   - Check the fuse in the electric module. (Please check the C/B in the electric module).

2. The computer does not boot,
   - Check the conditions of thermal and the proximity sensor.
   - Check the main power switch.

3. Working liquid doesn’t come out and high pressure doesn’t get formed in a pipe,
   - Check the water level in the water tank.
   - Check if the high pressure pump’s motor is operating properly. → if operating normal,
     Refer to the method of cleaning up the high pressure pump in the manual.
     → If the motor is not operating properly,
       - Check the output of voltage for the CN8 (1,3 : +),(2,4 : -) from FET PCB.
       - Check if the CP2 in the electrical modules turned on.

4. If the auxiliary water doesn’t flow,
   - Check the fuse in the electric module. (Check C/B in the electric module)
   - Check the operation of SSR4. (Check the input voltage of DC24V when SSR4 is on)
   - When the pump is operating but water doesn’t come out
   - Remove the foreign substance by blowing the air after opened the nipple in the pump.
   - (When the pump’s nipple is opened, carry it out after blocked the main power.)

5. If the spindle motor doesn’t rotate,
   - Check if the machine power is turned on.
• Check the timing belt in the spindle module.
• Check the exchange bearing if it has any problem.
• Check the CP2 in the electrical module if it’s turned on.

6. If the Z-axis doesn’t come down,
• Check if an electrode bar and a work piece are not contacted.
• Check if the power status of Z-axis motor driver is on.
• Check the Soft Limits.
• Newly detect the Z-axis’s origin.

7. If the pressure level cannot be controlled,
• Please refer to the method of cleaning up the high pressure pump in the manual.

8. If the electrode bar is shaking a lot,
• Check the electrode bar, which must be straight.
• Check the SV’s value in the machining conditions, if the value is set high, the electrode bar can be bent.
• Check the spindle bearing and replace it.

9. If water flows out of the machine’s head part,
• Check and replace the rubber O-ring and neuron bearing in the spindle module.
• Check and replace the carbide jet nozzle.

10. If the W-axis does not come down,
• Check if the main power is turned on.
• Check the power lamp of the W-axis’s driver.
• Check the soft limits.
• Newly detect the W-axis’s origin.

11. If the X or Y axis does not move,
• Check the machine’s power is turned on.
• Check the power lamp of X and Y-axis’s driver.
• Check the soft limits
• Newly detect the X, Y-axis’s origin.

12. If the keyboard or mouse doesn’t work,
• Check the connections of the keyboard and the mouse.
• Reboot the computer system.

13. If the discharging voltage is not generated,
• Check the C/B 20A in the electric module.

14. If the Z-axis goes up when you push the discharging button,
• Check the possibility of shortage in the head module or worktable.
• Check if the CP1 is turned on in the electric module.
• Check the voltage (V-Meter) of the voltage meater.

15. If the precision of the processed vertical hole is not good,
• Check if the guide is fit to the specification of the pipe.
• Check the condition of the guide if it’s worn out.
• Check and modify the vertical degree of the head.

16. If the electrode is bent during machining,
• Check the connection between the discharging cable and the work table.
• Check the solidity (snug tight or adherence state) between the work piece and the work table.
• Check the condition of the water jet from the electrode.
• Check the SV’s value in the machining conditions.
• Check the carbon brush in the head module.

17. If the electrode goes down too much after completion of drilling,
• Check the Z’s value if it is set too high.
• Check the input value for work-piece height.

18. If you cannot drill through the work piece,
• Check if the Zs value is set too low.
• Check the input value for work-piece height.
19. If the used water is not filtered into clean water,
   • Check the status of filter and its exchanging interval.
   • Check and clean the filter of inhalation tube for used water.
   • Check the status of inhalation tube whether it is bent or leaking.
   • Check and clean the checking sensor for water level.
   • Check the operation status of filtering pump.

21. If the ION value does not go down,

Check and clean the ion tank.

Exchange the ion resin.

Check the working status of ion pump.

Check and clean the ion checking sensor in the purification module.

20. If the screen button does not work,
   • After remove YGS Update System that have already installed in PC and re-install.
   • If you do not have the newest program, please contact us and take the program and install.

21. If the remote control each function is not operate,
   • Check the remote control whether pushed other switch.
   • Contact to Head office Repair service center. It could be remote control or DSP board trouble.

23. If an initial power-up, return to machine origin installation screen doesn’t come out,
   • After remove remote control at machine, and re-start. It could be remote control trouble occur.
   • After remove YGS Update System that have already installed in PC and re-install.
   • If you do not have the newest program, please contact us and take the program and install.
   • Check or replace internet cable that connected PC. It will be communication error.
24. If the monitor screen doesn’t come out,

- The screen saver would be operating. Please turn off the screen saver system.
- If “RGB no input signal” message comes out, check the connection of monitor signal line.
- Contact to Head office Repair service center. It could be monitor trouble.