

# ARC HEIGHT CONTROL

MODEL : HAC-01-A



# 1. OUTLINE

## 1-1 ARC HEIGHT CONTROL(AHC) FEATURES

- The unit does keep ARC's distance automatically by controlling the set ARC voltage during the welding. If the distance between work-piece and torch is changed owing to the deform of work-piece or the irregular surface, the voltage would go up or down and then this unit does adjust the height of torch.
- During the welding, the voltage change depends on the distance between torch and work-piece. For example, the voltage does not keep in the range of the set values; the slides do work up and down until the ARC voltage come within the set voltage values.
- The unit can work on the other equipment.

## 1-2 FUNCTION

- The voltage of TIG welder, PTA and Plasma Cutter is changed according to the distance between the torch and work-piece.
- There is a sensor to detect the voltage-changed values. If the voltage deviates from the set values, the controller does work to move up and down in order to keep the set values.
- The set values should be adjusted according the kind of process.

## 1-3 PRE-CONDITIONS

- This is a kind of calibrating unit to set off the voltage valves. Therefore, as follows are the pre-conditions to apply the unit for the process you want.

- 1) Not for the voltage to fluctuate in the input power.
- 2) Not for the contact resistance to change in the equipment.
- 3) Not for the outside contact resistance to change in the equipment.
- 4) There is not change in the inside resistance according to the temperature increase.
- 5) The welder's power supplier should be compatible to the sensor.  
(Some GTAW may be not compatible)

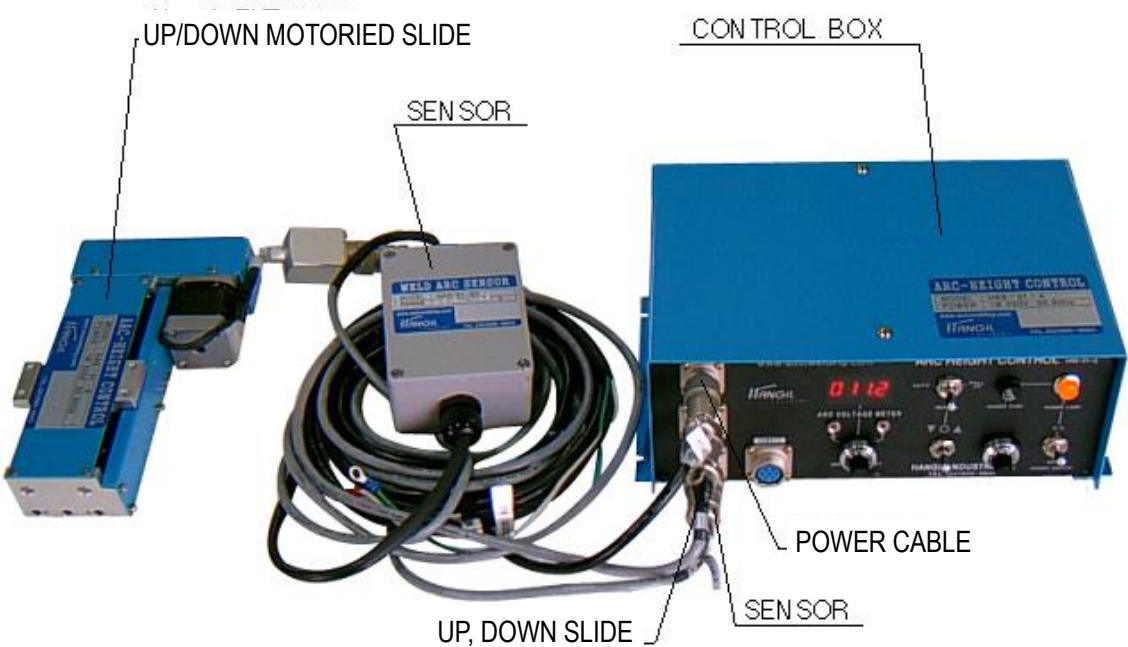
## 2. STANDARD SPECIFICATION

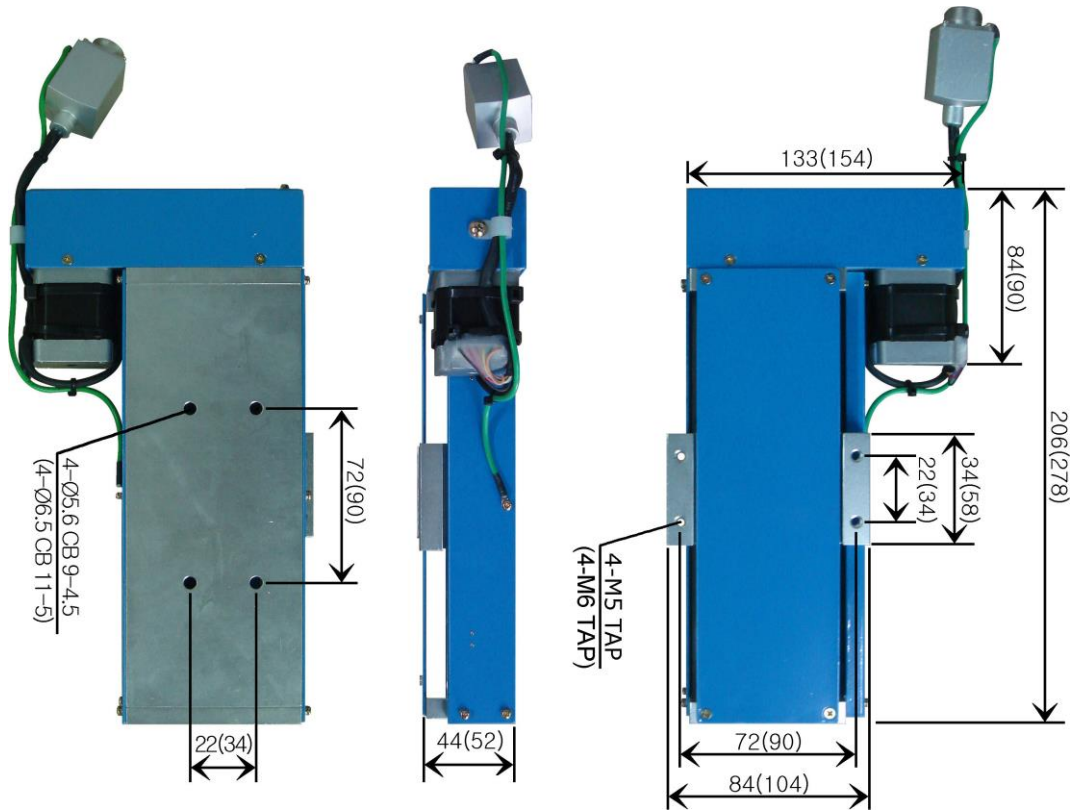
DESCRIPTION	HAC-01-A	HAC-01-PACT
Application voltage range	AVC : 5 ~ 50V	AVC : 50 ~ 500V
Application process	AVC : GTAW AVC : PAW	AVC : PLASMA CUTTING
CONTROLLER	HAC - 01 - A	HAC - 01 - PAC
1) FUNCTION CONTROL	AVC(AUTO & MANUAL)	AVC(AUTO & MANUAL)
2) STANDARD SETTING RANGE	AVC : 5 ~ 50V	AVC : 50 ~ 500V
3) DEVIATION SETTING	AVC : DEVIATION RANGE $\pm 0.1 \sim 0.5V$	AVC : $\pm 0.1 \sim 0.5V$
MOTORIZED SLIDES	HS - -	SAME AS DESCRIBED AT LEFT.
1) LOADING CAPACITY	Kg	
2) STROKE	mm	
3) MOMENT	Kg - Cm	
4) SPEED	mm/min	
5) MOTOR	STEPPING MOTOR	
SENSOR		
1)AVC	HAD - 01 - QV - 50	HAD - 01 - QV - 500
CONNETING CABLE	HAC - CABLE - 03	HAC - CABLE - 03
INPUT POWER	1 $\phi$ , 220V, 60Hz, 2A	1 $\phi$ , 220V, 60Hz, 2A

### 3. STRUCTURE

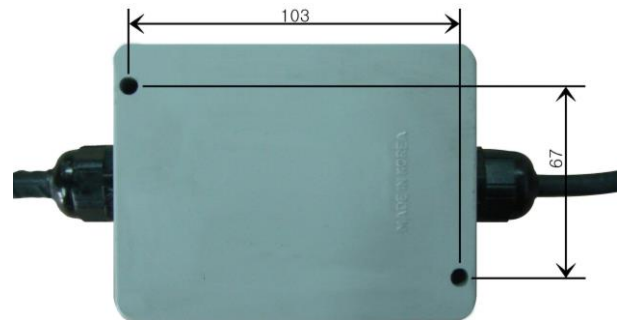
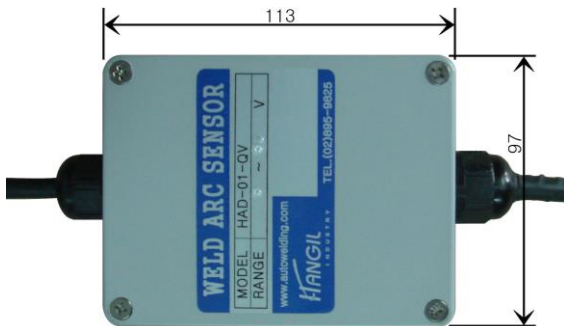
#### 3-1 STRUCTURE

- 1) CONTROL BOX 1SET
- 2) MOTORIZED UP/DOWN SLIDES 1SET(2 METERCALBE 1EA)
- 3) SENSOR FOR AVC 1SET
- 4) CABLES FOR POWER, SLIDES & SENSOR 1SET(2M CABLE 3EA)





( ) SIZE = SLIDE MODEL HS-02-140



## **4. EXPLANATION ON STRUCTURE PRODUCT**

### **4-1. CONTROL UNIT**

It is the unit to control the motorized slides, read the sensing data and process them to function.

### **4-2. MOTORIZED SLIDES**

The slides are made from Al materials, and for precision working we have used the ball screw and for protection of motors, we also have used the limit switch.

### **4-3. SENSOR**

The sensor HAD-01-QV can detect the change of the ARC voltage during the welding.

**Note :** The user should discuss the specification, type and maker of the welding machine with Hangil's Engineer.

## 5. EXPLANATION ON EACH PART.



### POWER SWITCH

- When the power switch is ON, the power is supplied.



### LAMP FOR POWER SUPPLY

- The lamp is lit when the power is supplied.



### FUSE (2A)

- It is a current breaker to stop the overflow of electricity. Please check if the power is not supplied.




### FUNCTION SWITCH FOR AUTO AND MANUAL

#### 1) AUTO S/W

- If the operator picks up the AUTO mode, the distance between torch and work-piece is adjusted automatically by moving the slides up and down.

During the welding, the sensor reads the ARC voltage variation and there is any change in comparison with the set voltage values, the slides move up and down according to the set values.

#### 2) MANUAL UP/DOWN S/W

- Under the MANUAL mode, the slides can be operated up and down with the toggle s/w up and down(  ).



### ARC VOLTAGE SET VOLUME

- The volume can set the standard welding voltage range from 50 ~ 500V.

The set values displays on the meter. The range of the Plasma Cutting machine is from 50 ~ 500V.

The set values displays on the meter.



### DISPLAY(It is the displayer for the standard voltage.)

- Here the standard voltage- set values shows up.

- The distance between torch and work-pieces depends on this standard voltage.



### LAMP FOR VOLTAGE UP AND DOWN.

- If during the welding the welding voltage is lower than the standard set values, the lamp for up is lit and the slide moves up until the welding voltage meets with the standard set figures. The welding voltage is higher than the standard and the slide moves down until the voltage is equal to the set standard.



### SENSITIVITY

- The responding speed can be adjusted with the dial volume.  
If the dial is set 0, the respond is slow and 10 is speedy responding.
- The responding speed for GTAW process or PAW is set up to be 0.5 ~ 5V.
- We recommend the dial sets 8 and then the respondings re-adjusts according to the operation.

## ● CONNECTOR

- Please note that the connectors located at the left are for outside installation.



**Power Connector for input power**



**Connector for UP/DOWN slides.**



**Connector for SENSOR**



**REMOTE connector(OPTION)**

- It is for outside remote controller for auto operation or for manual slides up and down.



## 6. INSTALLATION

### 6-1 SENSOR

#### 1) SENSOR

- The sensor that can apply to the rated current power current power welding machine does detect the variation of voltage during the welding.

#### (1) GMAW, PAW

- Type : HAD-01-QV-50
- Voltage detection range : 5 ~ 50V

\* Note that the welding machine, its specification and its makers to be applied should be discussed with Hangil Engineers.

#### (2) PLASMA Cutting

- Type : HAD-01-QV-500
- Voltage Detection range : 50 ~ 500V

### 2) HOW TO CONNECT THE SENSOR.

- The sensor should be connected to the welding process; GTAW, PAW, PLASMA CUTTING.

#### (1) GTAW, PAW, PLASMA CUTTING

- The sensor ( - BLUE-Colored cable ) is connected to the welding torch and the ( + RED-Colored cable ) to work-piece.

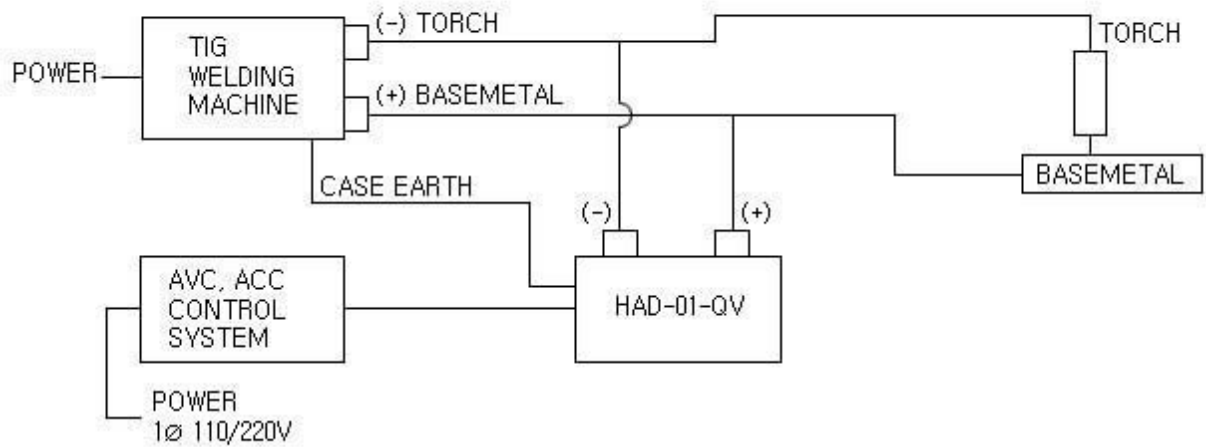
\*Note that the green cable should be earthed to the case of welding machine.

### 6-2 SLIDES (Pls refer to the separate sheet)

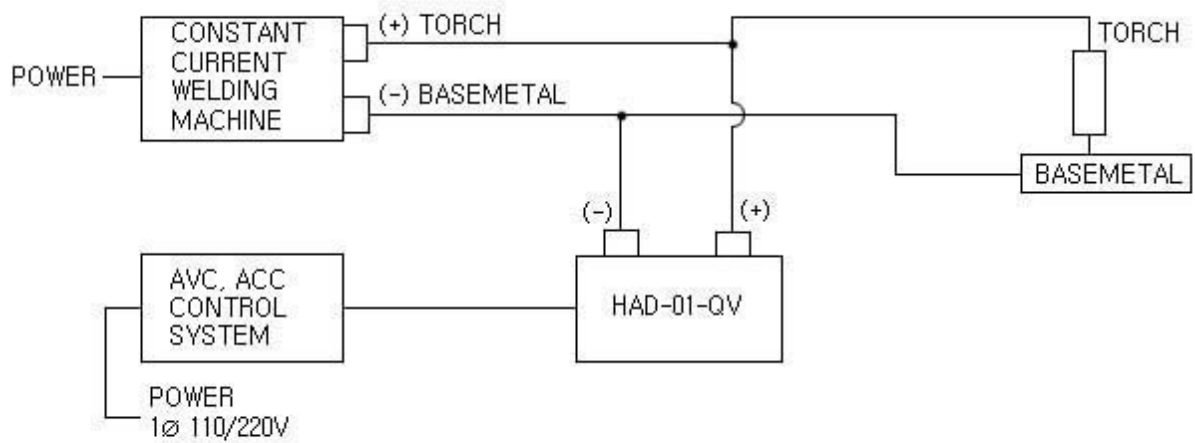
- When you install the slides, pls take care of the direction of slides. If the direction is wrong-installed, the slides would move on the contrary. No more works.

# AVC

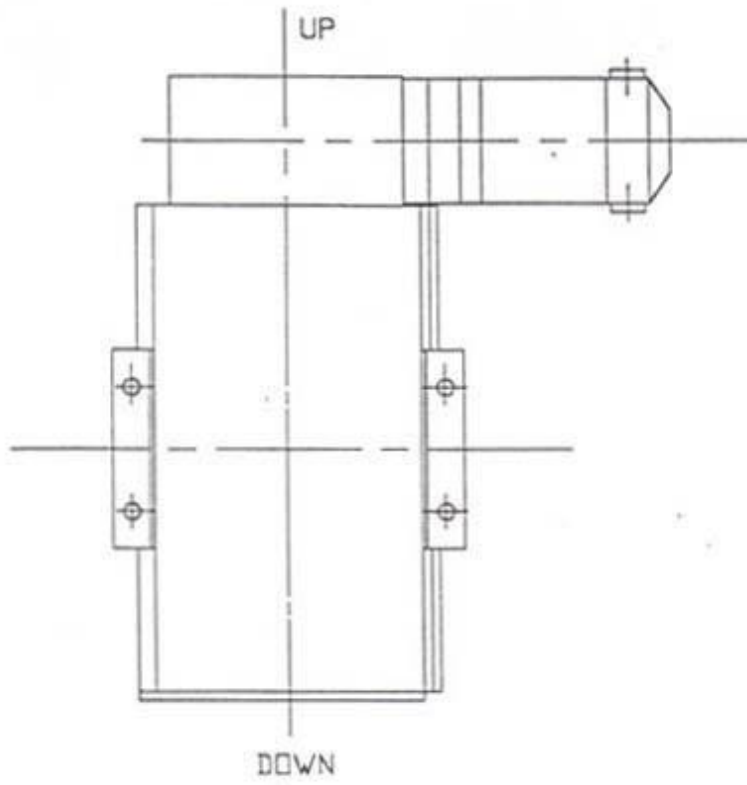
## 1) GTAW WELDING MACHINE



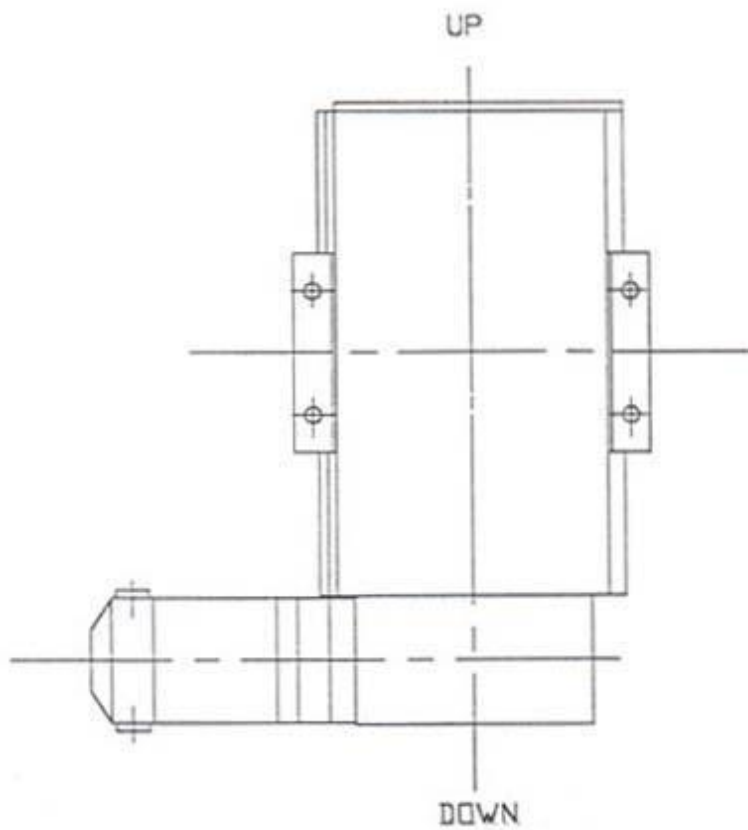
## 2) SUMBERGED WELDING MACHINE



① RIGHT SETTING UP



② WRONG SETTING UP



## 7. OPERATION

### 7-1.PREPARATION FOR OPERATION

- The user fully understand all the manual; first of all, the electric connecting, and each switch, how to operate, sensor connecting, etc.

#### - How to operate -

- 1) In the function switch, the user should select the switch for manual
- 2) Make sure that all the setting is done.
- 3) Set up the welding ARC voltage with the dials for the standard voltage.
- 4) Make sure the distance between torch and work-piece by moving slides up and down.
- 5) The welder is on. Set up all the parameters for welding.
- 6) Set up all and then switch "auto". The AHC would work.
- 7) Operation Chart

\*Please refer to the separate chart.

- Explanation on the operation.

UST : up slope time in the welding machine.

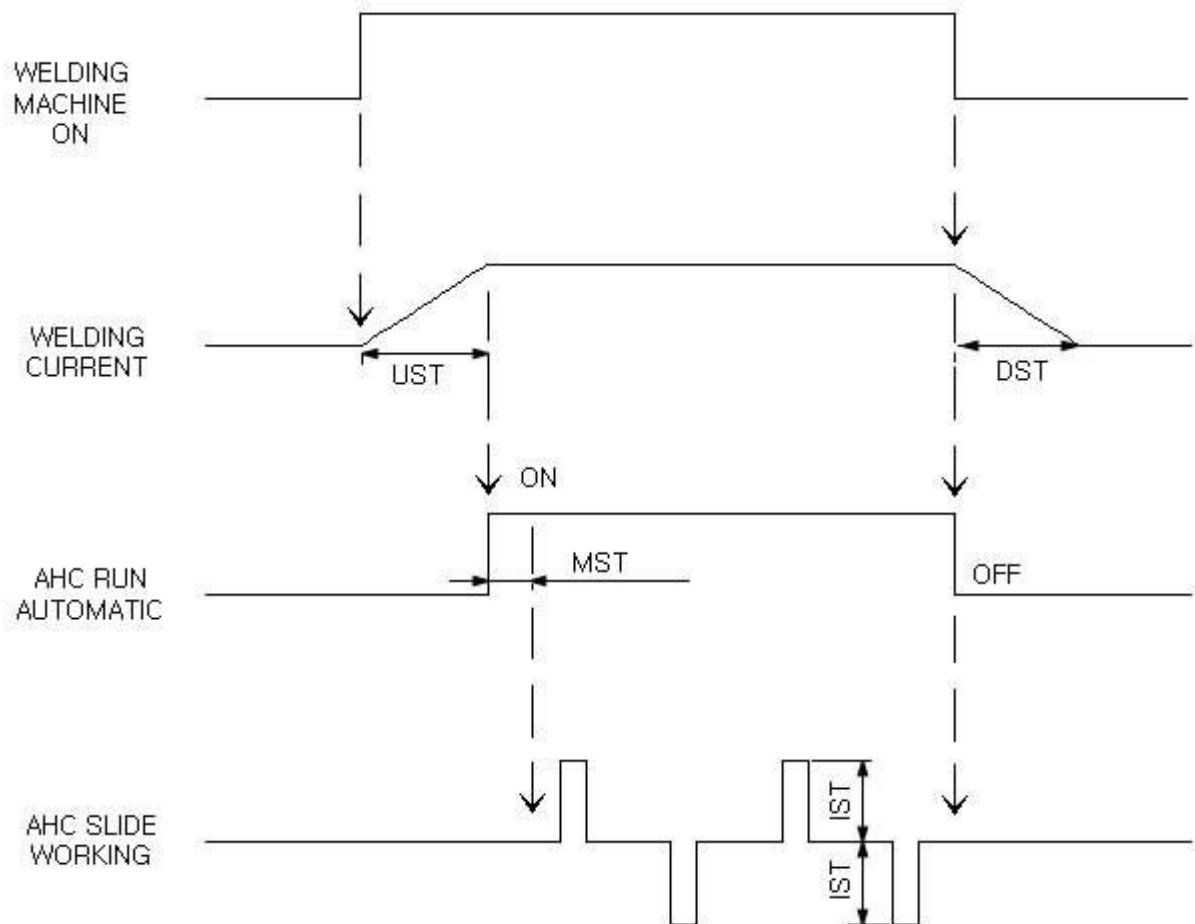
DST : down slop time in the welding machine.

MST : AHC memory time.

IST : AHC deviation values.

- (1) AHC auto switch should be on after the up slope time is operated.  
AHC auto switch should be off before the down slope.
- (2) After AHC auto switch off, if the ARC voltage is deviated from the standard values, the slides would move up and down for control of the distance between torch and work-piece.
- 8) If the test welding bead is not good, check out 4) described above and re-set up all the parameters.
- 9) Make sure do not change the welding parameters during the welding, because that makes the slides work to the changed conditions. Even though user changes the standard voltage, the distance would be changed.
- 10) After the welding is finished, the toggle switch should be ON from auto to manual
- 11) For the repeat welding, the toggle switch is ON and OFF.
- 12) Set up all the values again if the welding parameters are changed.
- 13) After finished, the power should be OFF.

# WORKING CHART



## DETAIL

- UST : WELDING MACHINE UP SLOPE TIME
- DST : WELDING MACHINE DOWN SLOPE TIME
- MST : AHC MEMORY TIME
- IST : AHC VARIATION NUMERICAL VALUE

## 7-2. PRECAUTION ON OPERATION

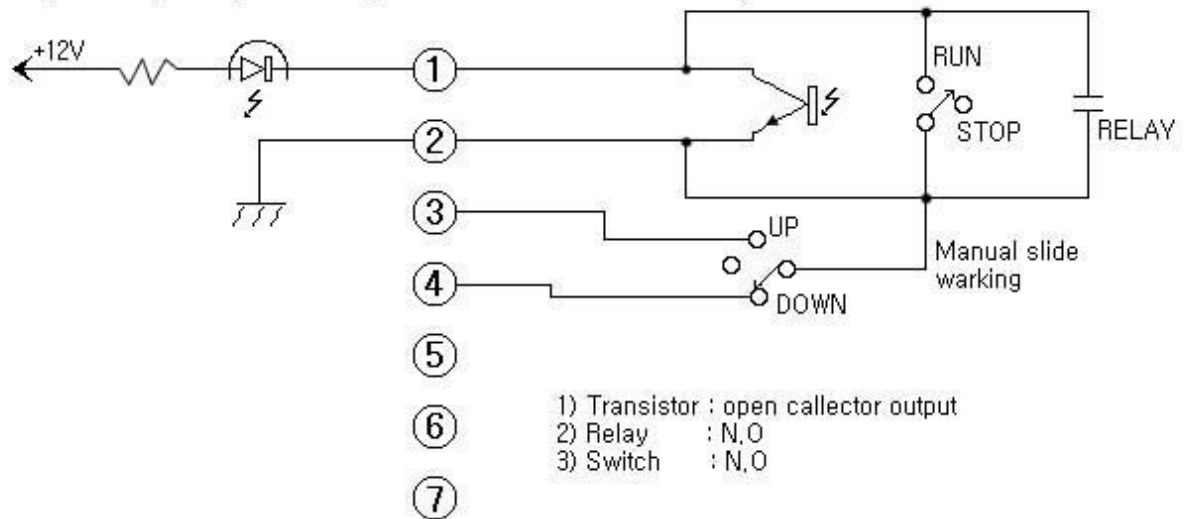
- 1) Pick up the sensor for the process and then connect the cable. If the selected sensor are different from the process, the control is not well done. The sensor is different from the function selection ; the slides works on the contrary and the unit is out of control.
- 2) When the user installs the slides initially, their location should be center. If the slides are not located at center, they may not be controlled properly and the limit switch is likely to work. In this case the AHC does not work anymore and the welding defect is produced.
- 3) There is likely not to apply according to the type of welding machine and its maker, so the user should check out with Hangil engineer before use.
- 4) Hangil guarantees that AHC can be operated properly when the conditions of application is acceptable.
- 5) During the welding, if you wants to adjust the distance between the torch and work-piece, you can make it by adjusting the standard voltage (If the voltage is up, the torch goes up, and voltages down makes the torch down.

### - NOTE -

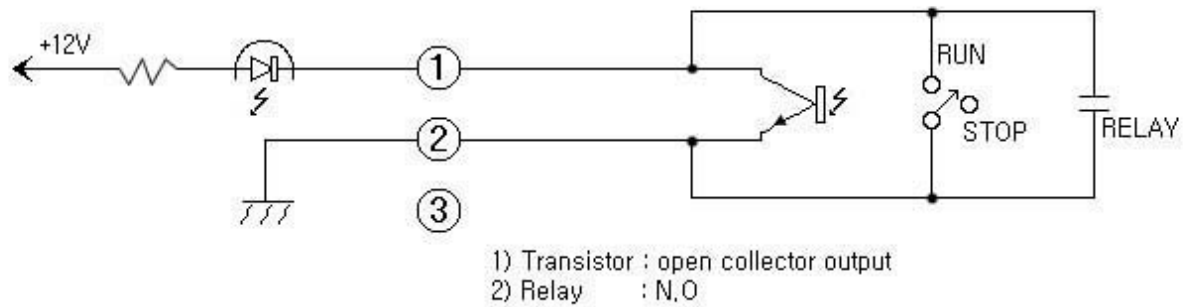
- 1) THE ( GREEN-COLORED CALBE ) IN THE SENSOR SHOULD BE EARTHED TO THE CASE OF WELDING MACHINE. IF YOU DO NOT, THE SENSOR MUST BE BROKEDOWN.
- 2) THE ( - BLUE-COLORED CABLE ) IS CONNECTED TO THE TORCH. THE ( + RED-COLORED CABLE ) SHOULD BE DONE TO WORK-PIECE. PLEASE MAKE SURE IF THE CABLE CONNECTION IS CORRECT. OR THE SENSOR DO NOT WORK PROPERLY INTO THE BREAKDOWN.

# EXTERNAL CONNECTING DRAWING

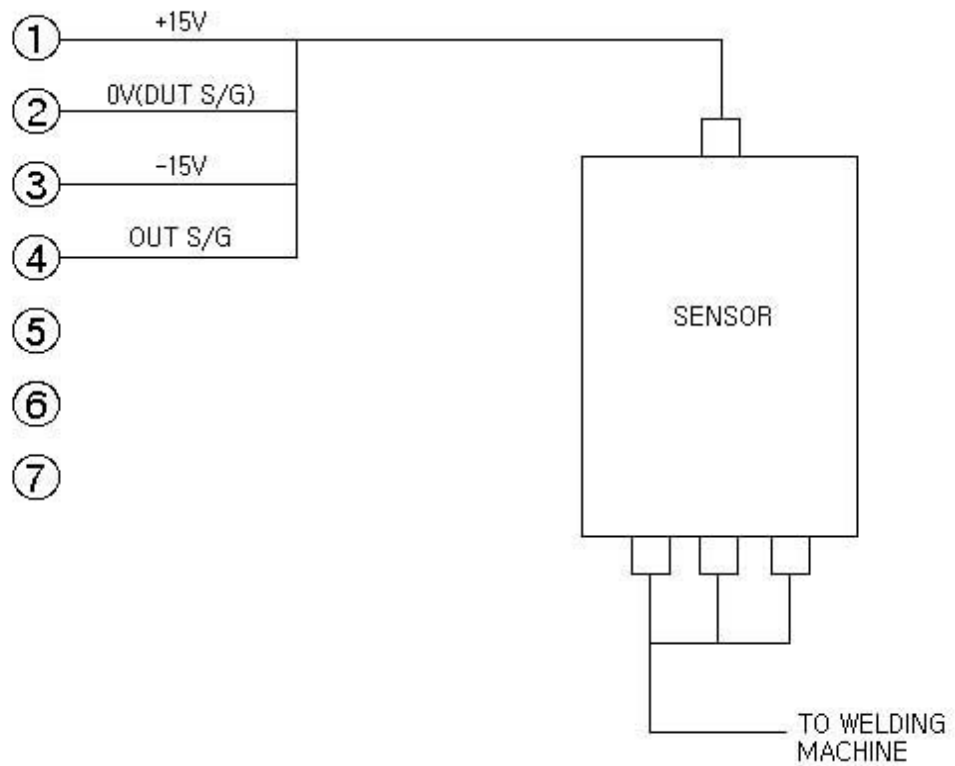
## 1) AUTO(RUN) START(REMOTE CONNECTOR)



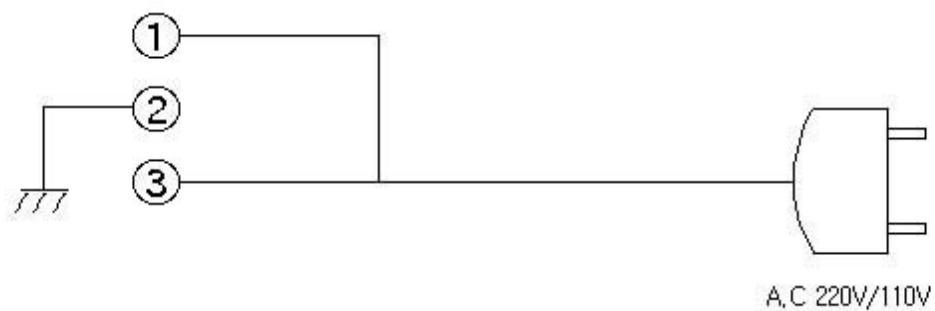
## 2) INPUT PULSE SYNCHRONISM CONNECTOR(OPTION)



### 3) SENSOR CONNECTOR

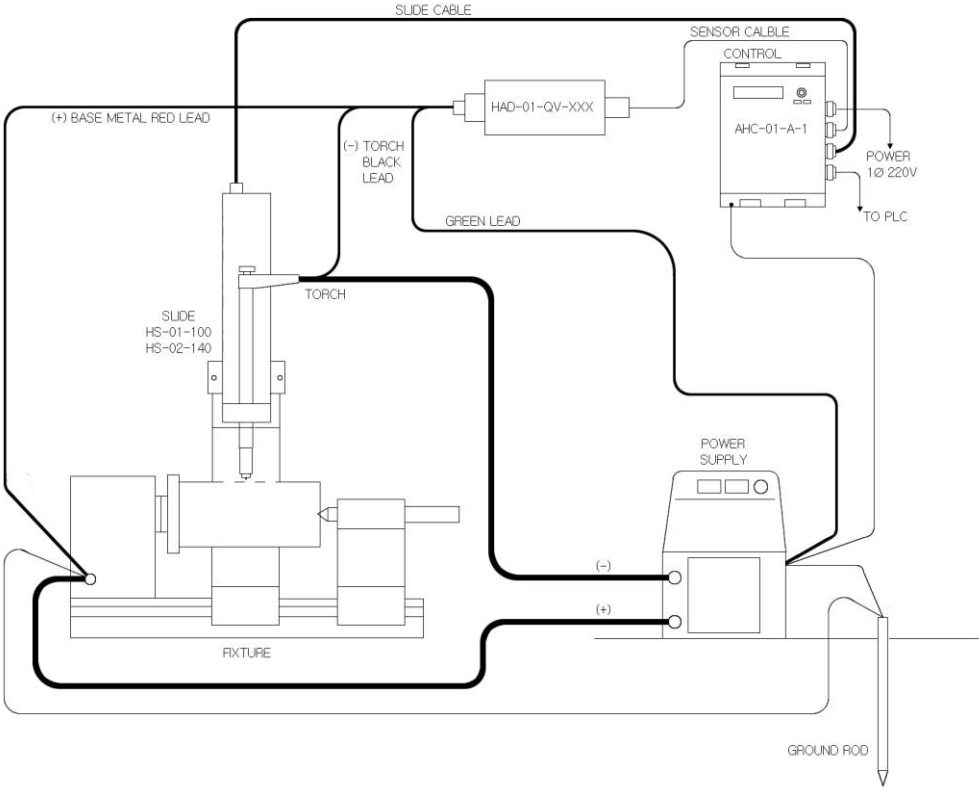


### 4) POWER INPUT CONNECTOR

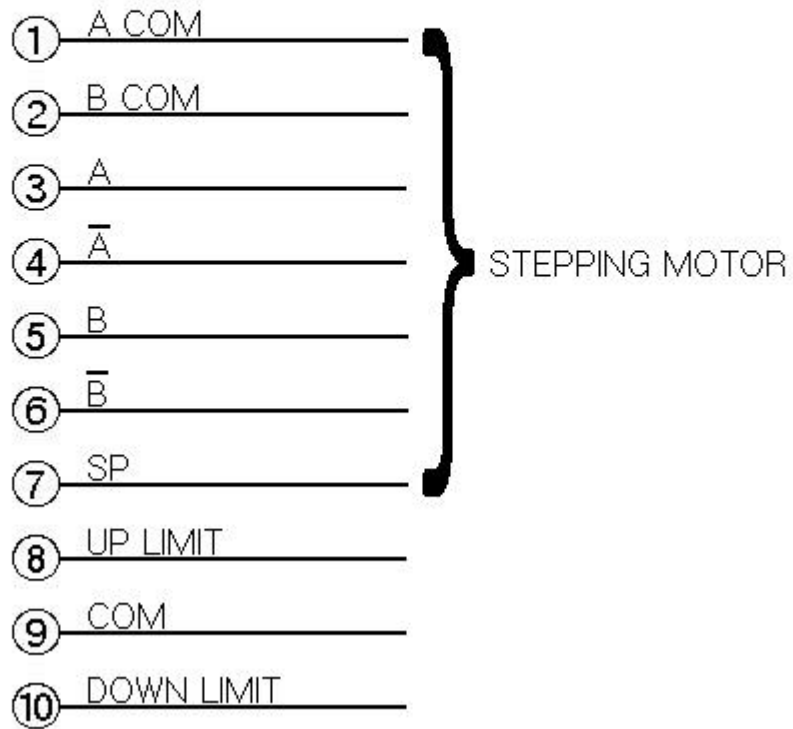


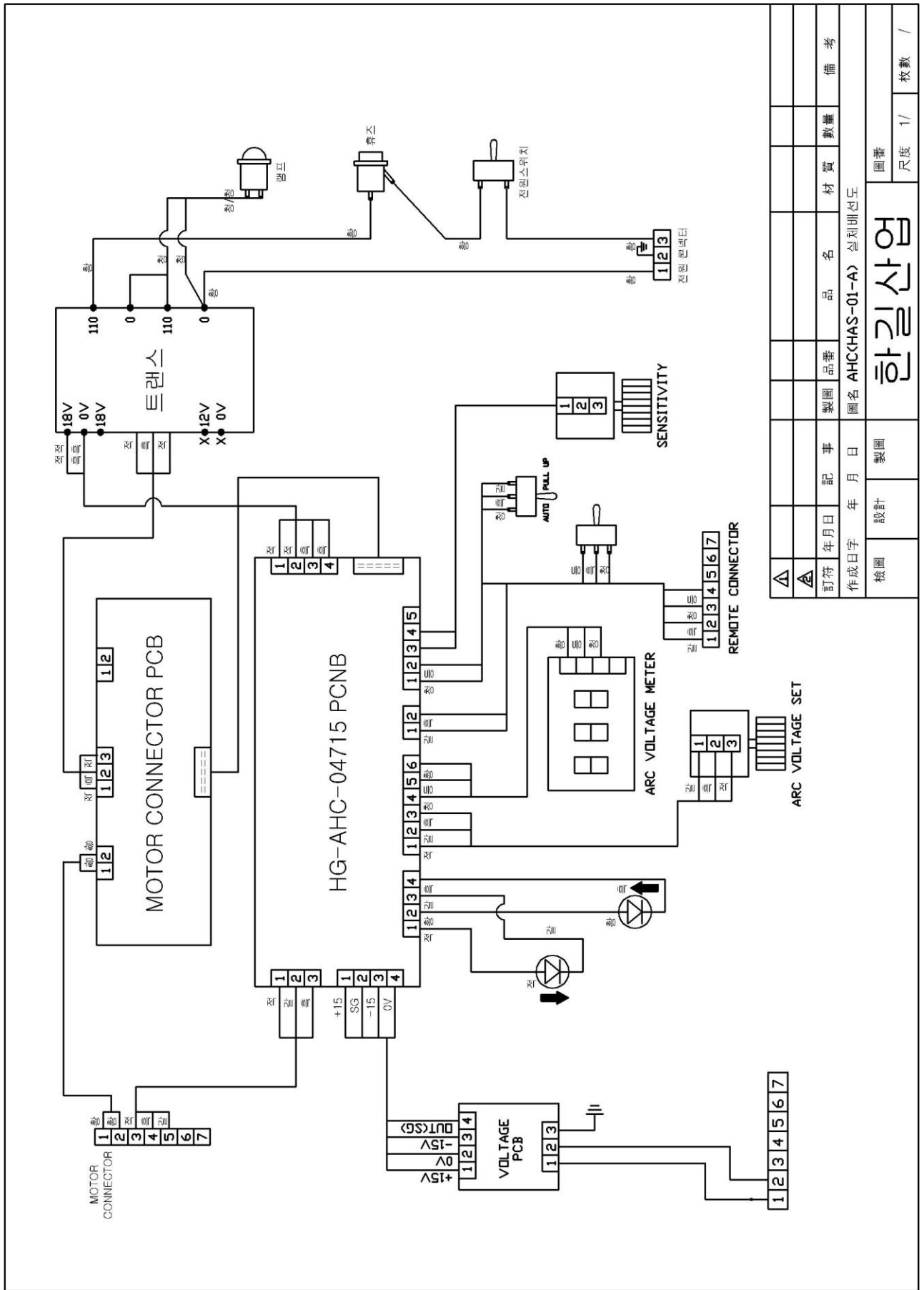


# Installation Drawing (A. H. C SYSTEM CONNECTION)



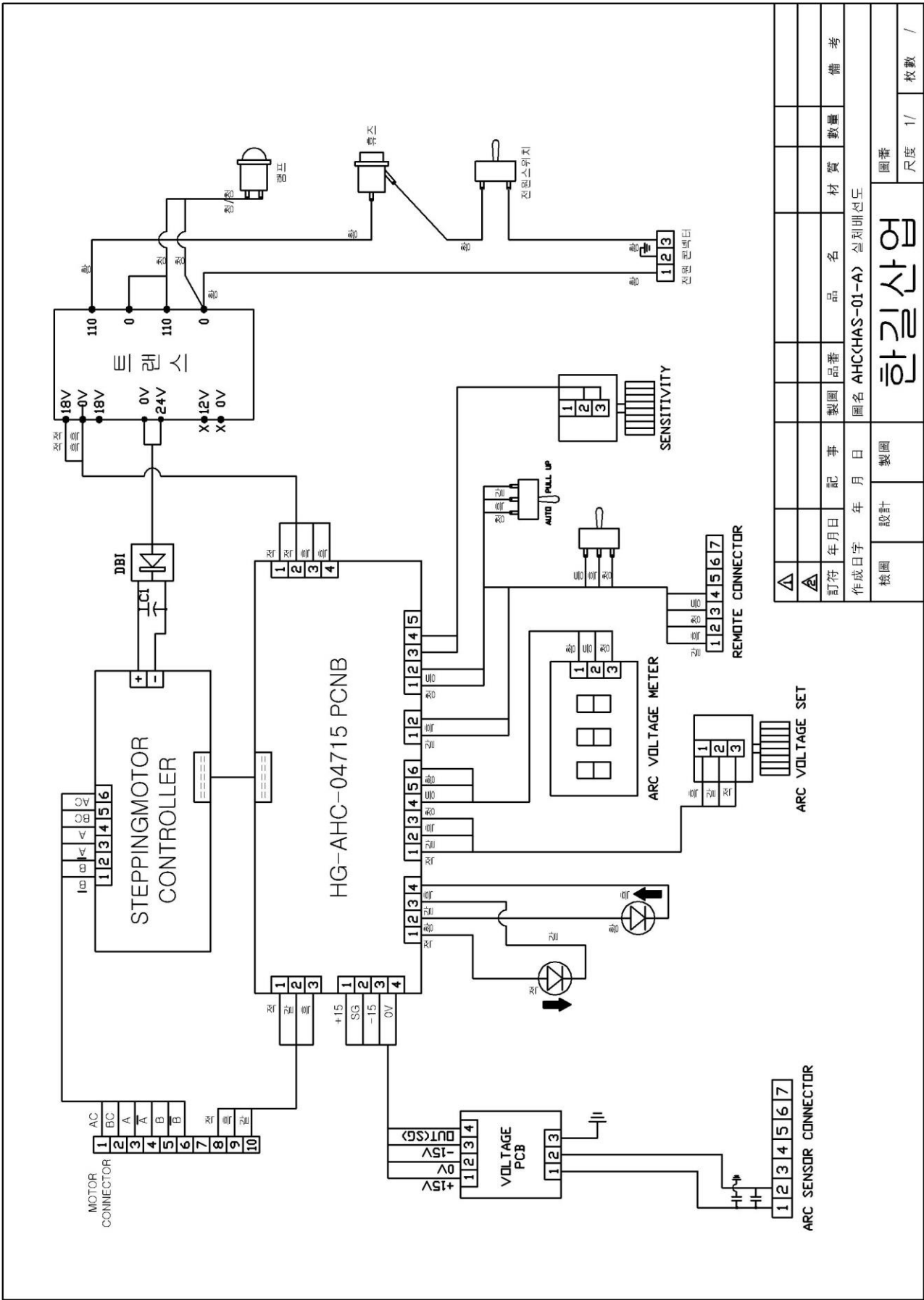
MOTOR U/D SLIDE CONNECTOR 결선도





訂符 年月日 作成日字 年月日	記事 圖名	製品番 AHC(HAS-01-A)	品名 실험메신더	材質 圖番	數量 1/	備考 /

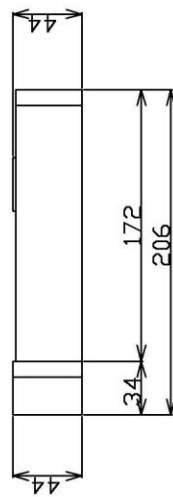
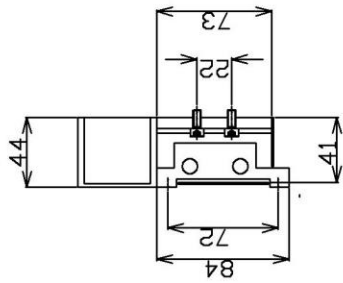
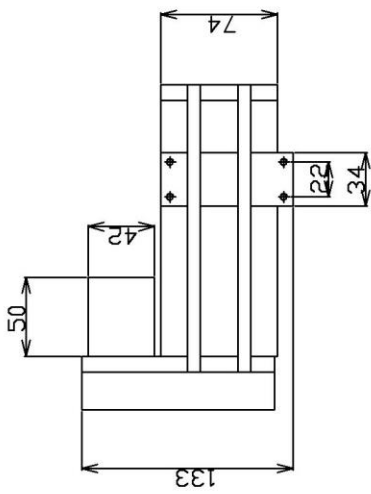
**한글산업**



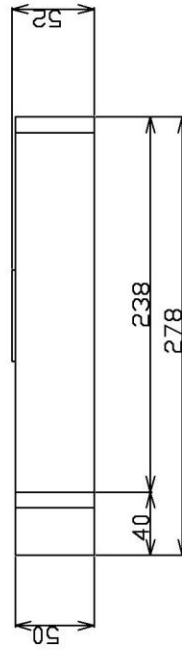
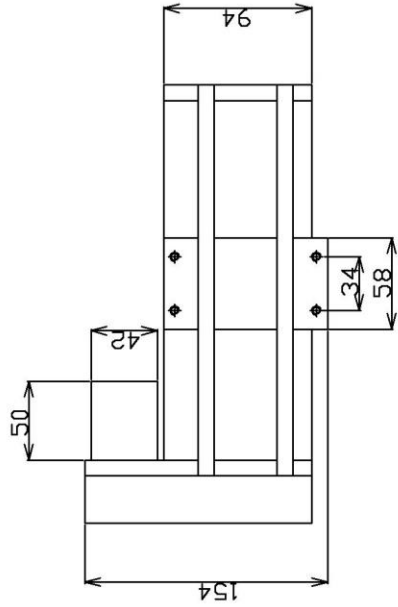
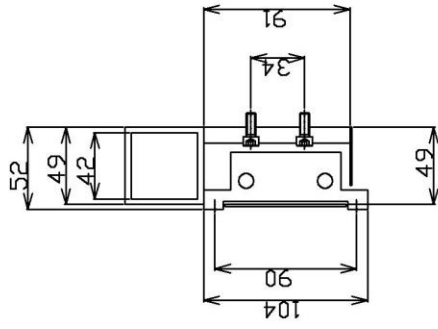
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# 한글산업

圖名 AHCHAS-01-A) 실체배선도



FOR		HS-01-100	
TITLE			
SCALE	DRAWER	CHECKED BY	
	DESIGNER	APPROVED BY	
DATE	JOB NO.	DWG. NO.	REV. 1
한글산업			



FOR HS-02-140

TITLE

SCALE

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DESIGNER

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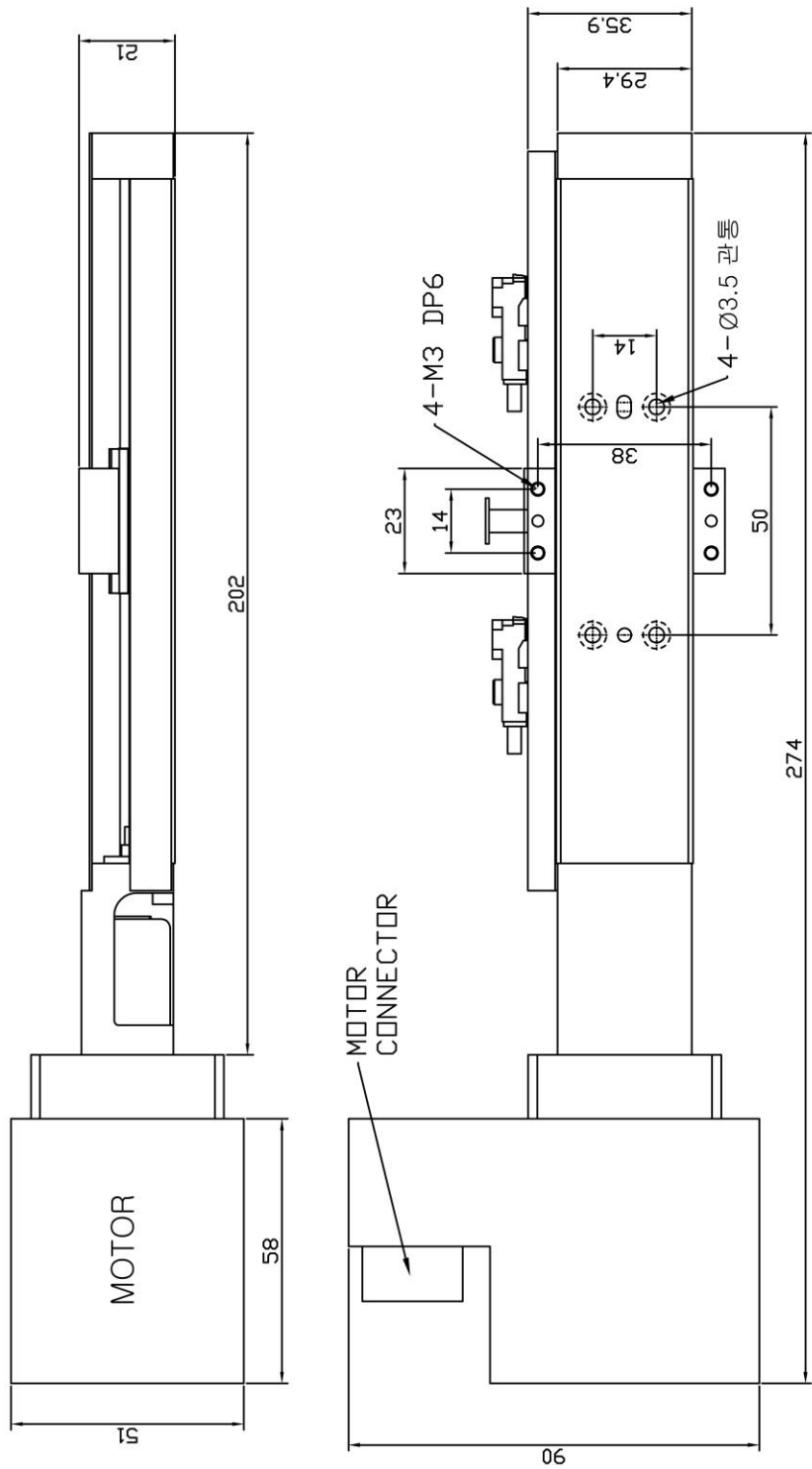
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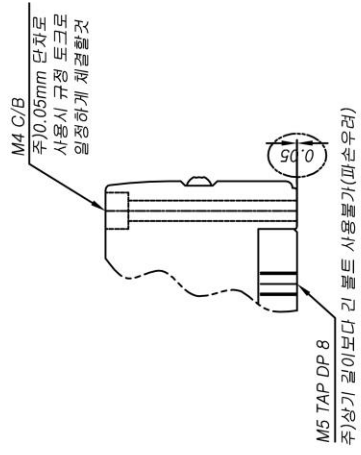
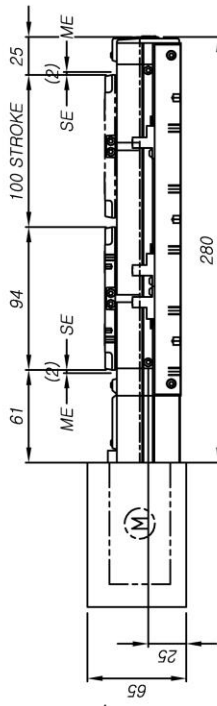
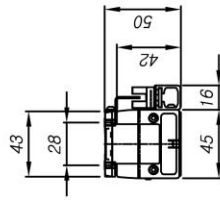
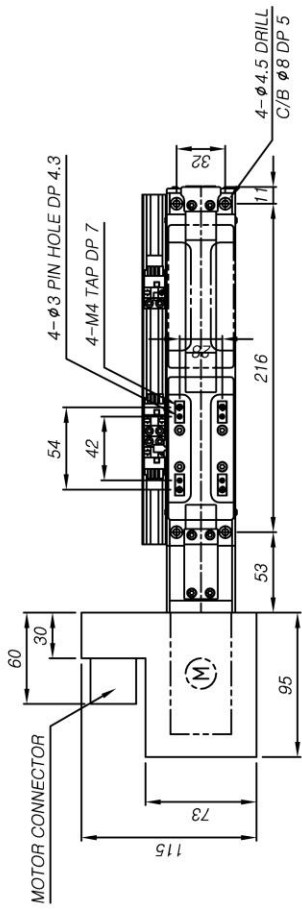
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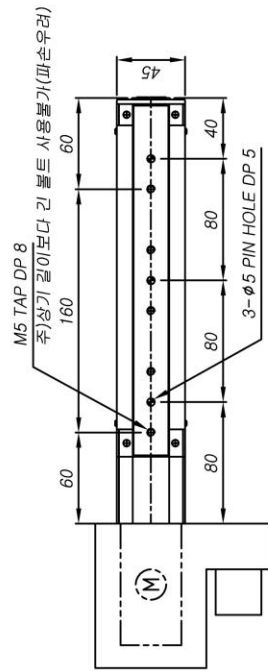


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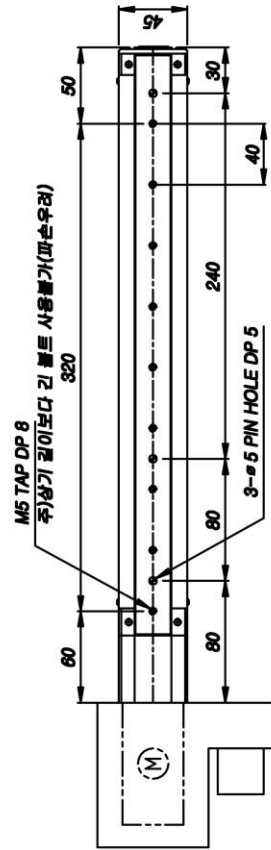
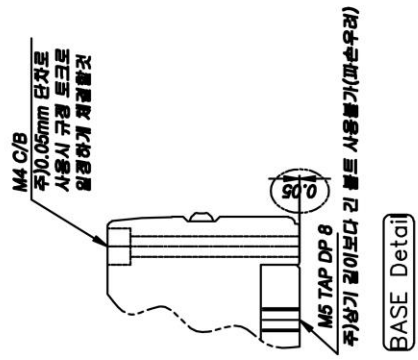
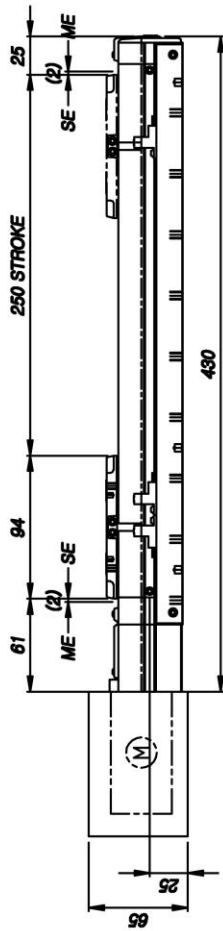
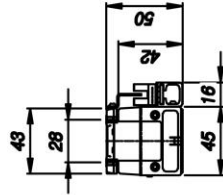
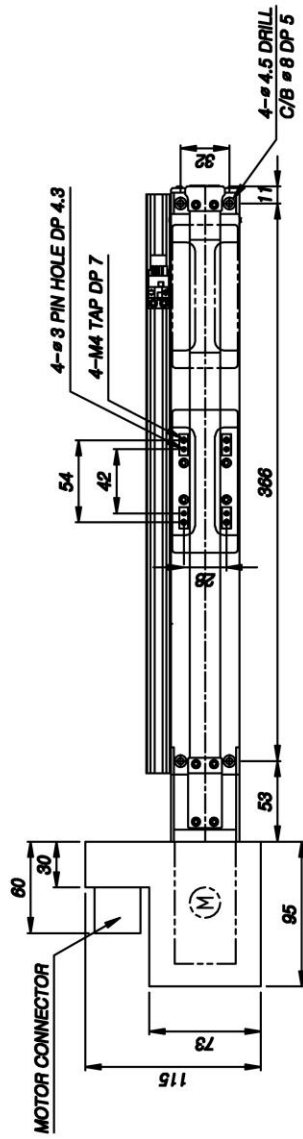


**BASE Detail**



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제출인	김민준	제출자	김민준
제출번호	2024-08-26-001	제출대상	한글산업
제출내용	한글산업		





REV	DATE	BY	CHK	APP	DESCRIPTION
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3					
4					
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6					
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T E L : 82-2-895-9825

F A X : 82-2-894-6771

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