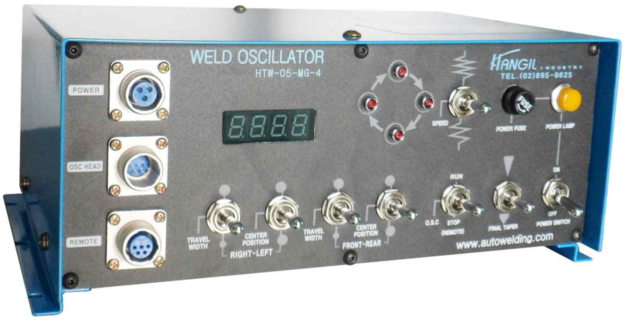
MAGNETC ARC OSCILLATOR

MODEL : HTW-05-MG IV


WELD OSCILLATOR
HTW-05-MG-4
HANGIL INDUSTRY
TEL.(02)895-9825
POWER
OSC HEAD
REMOTE
SPEED
POWER FUSE
POWER LAMP
RUN
O.S.C
STOP (REMOTE)
FINAL TAPER
ON
OFF
POWER SWITCH
TRAVEL WIDTH
CENTER POSITION
RIGHT-LEFT
TRAVEL WIDTH
CENTER POSITION
FRONT-REAR
www.autowelding.com

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1. OUTLINE

Magnetic Arc Oscillator does apply the magnetic power for oscillation of the welding, instead of the established mechanical weaving M/C . The inside of the head is winded with coil for making the electromagnetic force, and when the magnetic force approaches near the Arc struck in the torch, the electromagnetic force makes the Arc pushed and pulled for oscillation. The vibration does not occur while the welding is being done, so the welding defects can be reduced. As follows are the result from the oscillation;

1) To get the bead clean and uniformed in the shape.
2) To get the penetration uniformed
3) To get multi deposit effect with one welding.
4) Arc is stable
5) To prevent the undercut and overlap.

NOTE

1) Make sure the earth cable should be bolted to the box case.
   (The earth resistance should be under 100ohm)
2) Take care not to break any insulation in the welding torch when to mount the OSC head on the welding torch.
   - In case the earth in the OSC head is broken, the weld current makes the OSC head broken down, because the weld current runs on the OSC head.

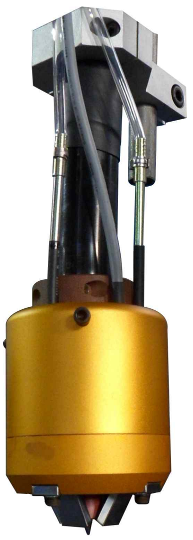
2. STANDARD SPECIFICATION

MODEL	HTW-05-MG(IV)	
INPUT POWER	1¢ 220V 50/60Hz, 1A	
CONTROL	DIGITAL	
OSCILLATION SPEED	0.0 ~ 1000Hz(0 ~ 3,000osc/min)	
TRAVEL WIDTH	ARC LENGTH 0~1:1MAX	
CENTER POSITION	ARC LENGTH 0~1:1MAX	
DOWN SLOPE TIME	0.0 ~ 9.9sec(unit : 0.1sec)	
MANGNETIC UNIT (COOLING RATE 3ℓ/min. 3kg/㎠) OSCILLATION HEAD : WATER COOLING TYPE	MG-4	600 Gauss/max
APPLICABLE PROCESS	GTAW, PAW, SAW, SPAY, TYPE, GMAW	

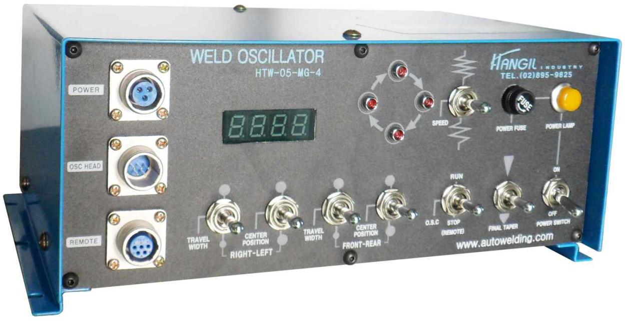
3. STRUCTURE

3-1. STRUCTURE PRODUCTS

1) CONTROL BOX	1SET
2) MAGNETIC HEAD	1SET
3) POWER CABLE	1SET
4)CONNECTOR FOR REMOTE	1SET



<OSC HEAD>


WELD OSCILLATOR
HTW-05-MG-4
HANGIL INDUSTRY
TEL.(02)895-9825
POWER
OSC HEAD
REMOTE
SPEED
FUSE
POWER FUSE
POWER LAMP
TRAVEL WIDTH
CENTER POSITION
RIGHT-LEFT
TRAVEL WIDTH
CENTER POSITION
FRONT-REAR
RUN
O.S.C
STOP
(REMOTE)
FINAL TAPER
ON
OFF
POWER SWITCH
www.autowelding.com

<CONTROL BOX>

4. EXPLANATION ON PART

4-1. CONTROL BOX

- The control box is consisting of CPU sequence PCB and Magnetic Control PCB. For easy maintenance, the outside connection is produced with connector.
- On the front panel there are the functions switches which are needed to operate the unit. Before using, do understand all the function switches fully.

4-2. MAGNETIC HEAD UNIT

- Inside the head there is the coil winded for production of the electromagnetic force. The pole of the head is mounted near the ARC so the head should be protected from the heat by using the water cooling.

4-3. CONNECTOR

1) CN1 : connector for power supply.
2) CN2 : connector for Magnetic Head
3) CN3 : connector for remote control box.

4-4. REMOT CONTROL BOX (OPTION)

- On the remote control box there are RUN or STOP switch for outside control.

5. EXPLANATION ON THE FUNCTION SWITCH

ON
OFF
POWER SWITCH

POWER ON/OFF SWITCH

- When the toggle switch is positioned “ON”, the power is supplied and the power lamp is also ON, so when the work finishes completely, the switch shall be moved to “OFF”

POWER DISPLAY LAMP

- The power lamp ON means the power is being supplied.

FUSE
POWER FUSE

FUSE

- It is a kind of circuit breaker to prevent the power from oversupplying in order to protect the controller.

RUN
O.S.C
STOP
(REMOTE)

OSCILLATOR TUN - STOP SWITCH

- It is a toggle switch for OSCILLATOR ON/OFF. When the toggle is positioned RUN, the Oscillator is operated as per the program. On the STOP position, the Oscillator does not work.

SPEED (1.01 ~ 1.999 displaying)

- It is a toggle switch to control the oscillation speed. Its “up” position means the speed increasing and its “down” position is the speed down. On the program display, the speed setting figure is displayed.
- If the setting figure is high, the Osc. speed is lower. The lower figure means the oscillation speed is increased.
- The setting figure means frequency. Accordingly, 999Hz means it takes one sec. to go & return.

FINAL TAPER

FINAL TAPER (2.00 ~ 99.9 displaying) DOWN SLOPE

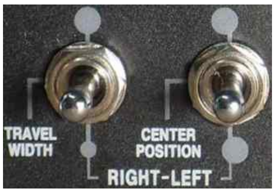
- It is a function to make the bead crate to be tapered down. For the setting time, the width of oscillation is smaller gradually. Therefore, the crate is shaped like a kind of triangle.
- Setting by unit 0.1sec and max. setting point is 99.9sec.

● PROGRAMMING AND ITS CORRECTION.

- It is possible to program and correct during RUN or operation, by moving up/down the toggle. The figure comes out on the displayer so it is programmed with the switch.
- On the mode 1, there is the setting point to be shown up and the mode 1 does change rapidly during mode 1 on.

PROGRAM DATA DISPLAY

- On the display the oscillating mode 1-6 can be programmed or displayed.
  Pls refer to the details in the Function List.

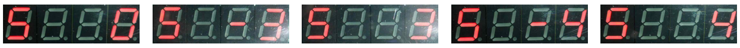


LEFT/RIGHT TRAVEL WIDTH (6.00 ~ 6.99)

- It is a toggle switch to adjust ARC travel width from left to right. When the switch is up, the ARC oscillation is widen. If the switch is positioned down, the oscillation is narrowed.

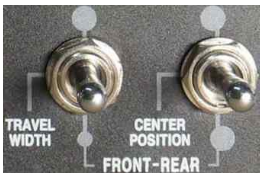
  The max. oscillation width is ranged within the arc length. Therefore, if the length of ARC is 1, the max. oscillation range is 1. The displayed figure means percentage against the length of ARC.

LEFT/RIGHT CENTER POSITION (500 ~ ±599)



- With the toggle switch, the center can be moved to left or right by positioning it up: the center is moved to left, and if the switch is down position, the center is moved to right (Pls refer to the picture on the installation)
- The Magnetic Head should be poisoned at the center, however it is unlikely to install at the center, so in this case the center of ARC can be corrected to the center position with this function.
- Arc can be moved to the exact weld point by inputting the figure(-/+)

  The max. width of oscillation is in the ratio of 1 to the Arc length 1. The displayed figure is converted into the percentage:(5.00 ~ +5.99 or 5.00 ~ -5.99)

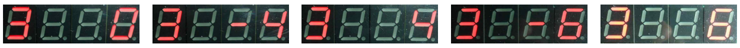


FRONT/REAR TRAVEL WIDTH (4.00~4.99)

- With the toggle switch, the operator can adjust the length from front to rear by placing it up or down(if the switch is positioned up, the length is longer and if it is down, it is shorter)
- The max length is ranged in the ratio of 1 to Arc lenght1.

  The figure is displayed as percentage into which the length of Arc is converted.

FRONT/REAR CENTER POSITION (300 ~ ±399)



- With the toggle switch, the Arc position can be moved to front or rear in order to correct the Arc position: welding point. If the switch is up, the arc moves to the front. The Arc is moved to rear with the toggle down. (Pls refer to the picture on the installation.)
- While the operator checks the welding point, he/she can adjust the welding points to rear or to front.

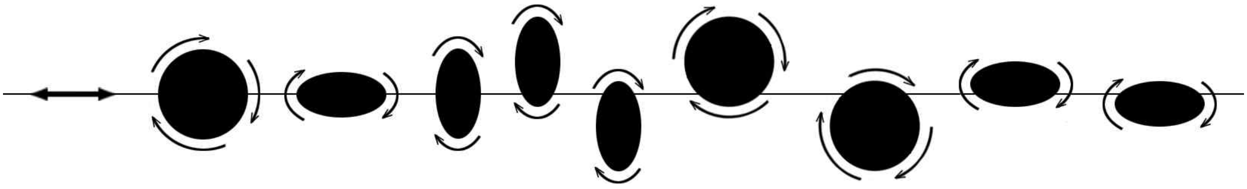
  The available correction range is within 3.00 to +/-3.99 displayed as the percentage into which the length of Arc is converted.

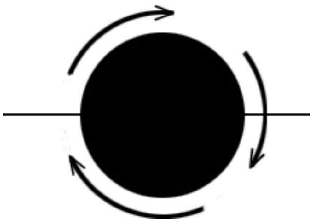
6. FUNCTION LIST

MODE	Function Features
1	OSCILLATION SPEED(Hz) Range: 1.01 ~ 1.999(setting unit by 0.1Hz)
2	FINAL TAPER (2.00 ~ 99.9sec) DOWN SLOPE(setting unit by 0.1sec)
3	FRONT/REAR CENTER POSITION (300 ~ ±399)
4	FRONT/REAR TRAVEL WIDTH (4.00 ~ 4.99) Max. width setting ranged in the ratio of 1 to the length of Arc(1) Setting unit by Percentage (%)
5	LEFT/RIGHT CENTER POSITION (500 ~ ±599)
6	LEFT/RIGHT TRAVEL WIDTH (6.00 ~ 6.99) Max width setting ranged in the ratio of 1 to the length of Arc(1) Setting unit by Percentage (%)

7. OSCILLATION PATTERN PROGRAM

- There are 9 patterns to be programmed for the oscillation;
  FRONT/REAR CENTER Position-ADJUST : (300 ~ ±399)
  FRONT/REAR TRAVEL WIDTH : (4.00 ~ 4.99)
  LEFT/RIGHT CENTER Position-ADJUST : (500 ~ ±599)
  LEFT/RIGHT TRAVEL WIDTH : (6.00 ~ 6.99)



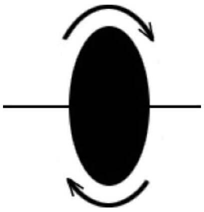


Set the parameters for the pattern of picture 1 as follows;
- Movement of weld point from front to rear (300)
- Movement of weld point from left to right (500)
- Adjust of oscillation width from front to rear (4.50)
- Adjust of oscillation width from left to right (6.50)

Picture 1

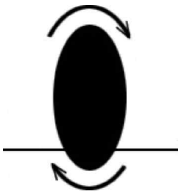
Set the parameters for the pattern of picture 2 as follows;
- Movement of weld point from front to rear (300)
- Movement of weld point from left to right (500)
- Adjust of oscillation width from front to rear (4.99)
- Adjust of oscillation width from left to right (6.50)

Picture 2



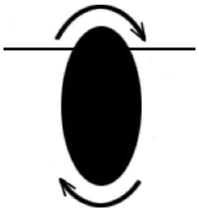
Set the parameters for the pattern of picture 3 as follows;
- Movement of weld point from front to rear (300)
- Movement of weld point from left to right (500)
- Adjust of oscillation width from front to rear (6.99)
- Adjust of oscillation width from left to right (4.50)

Picture 3



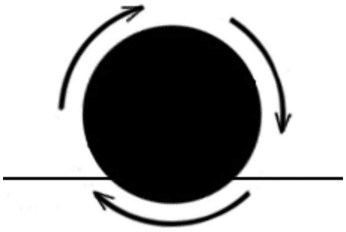
Set for the pattern of Picture 4 as follows;
- Movement of center to front/rear (300)
- Movement of center to left/right (5+50)
- ADJ of osc width from front to rear (4.50)
- ADJ of osc width from left to right (6.99)
- Movement of center to left/right (5+50)
- ADJ of osc width from left to right (6.99)

Picture 4



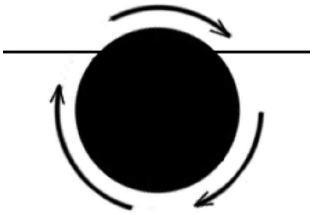
-Movement of center to front/rear(300)
-Movement of center to left/right(5-50)
-ADJ of osc width from front to rear(4.50)
-ADJ of osc width from left to right(6.99)
-Movement of center to left/right(5-50)
-ADJ of osc width from left to right(6.99)

Picture 5



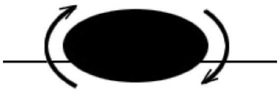
-Movement of center to front/rear(300)
-Movement of center to left/right(5+50)
-ADJ of osc width from front to rear(4.50)
-ADJ of osc width from left to right(6.40)
Or
-Movement of center to left/right(5+50)
-ADJ of osc width from front to rear(4.50)
-ADJ of osc width from front to rear(6.50)

Picture 6



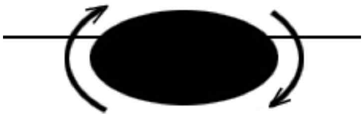
-Movement of center to front/rear(300)
-Movement of center to left/right(5-50)
-ADJ of osc width from front to rear(4.50)
-ADJ of osc width from left to right(6.60)
-Movement of center to left/right(5-50)
-ADJ of osc width from front to rear (6.50)

Picture 7



-Movement of center to front/rear(350)
-Movement of center to left/right(5+50)
-ADJ of osc width from front to rear(4.99)
-ADJ of osc width from left to right(6.50)

Picture 8



-Movement of center to front/rear(350)
-Movement of center to left/right(5-50)
-ADJ of osc width from front to rear(4.99)
-ADJ of osc width from left to right(6.50)

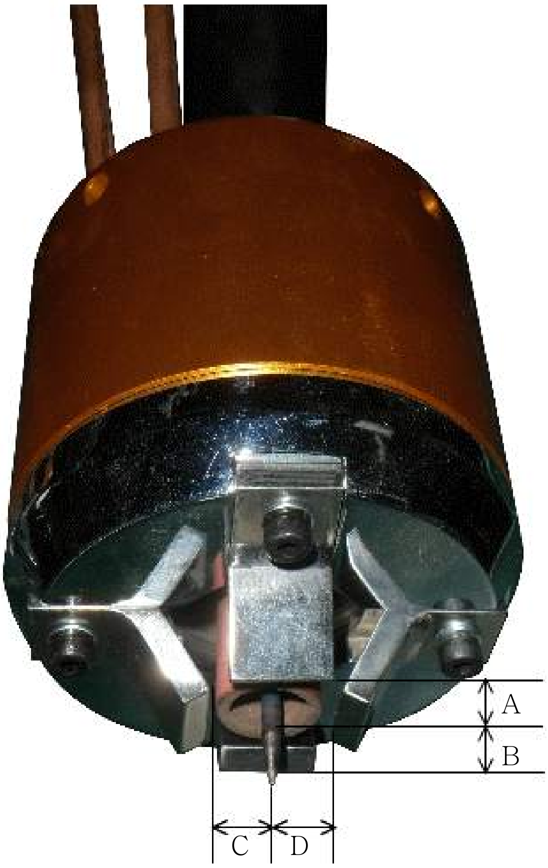
Picture 9

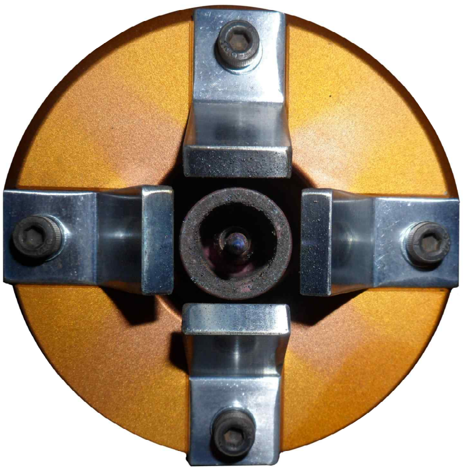
8. INSTALLATION

8-1. HTW-05-MG-(IV)

(360° Arc-rotating Weaver or Pre-heater)

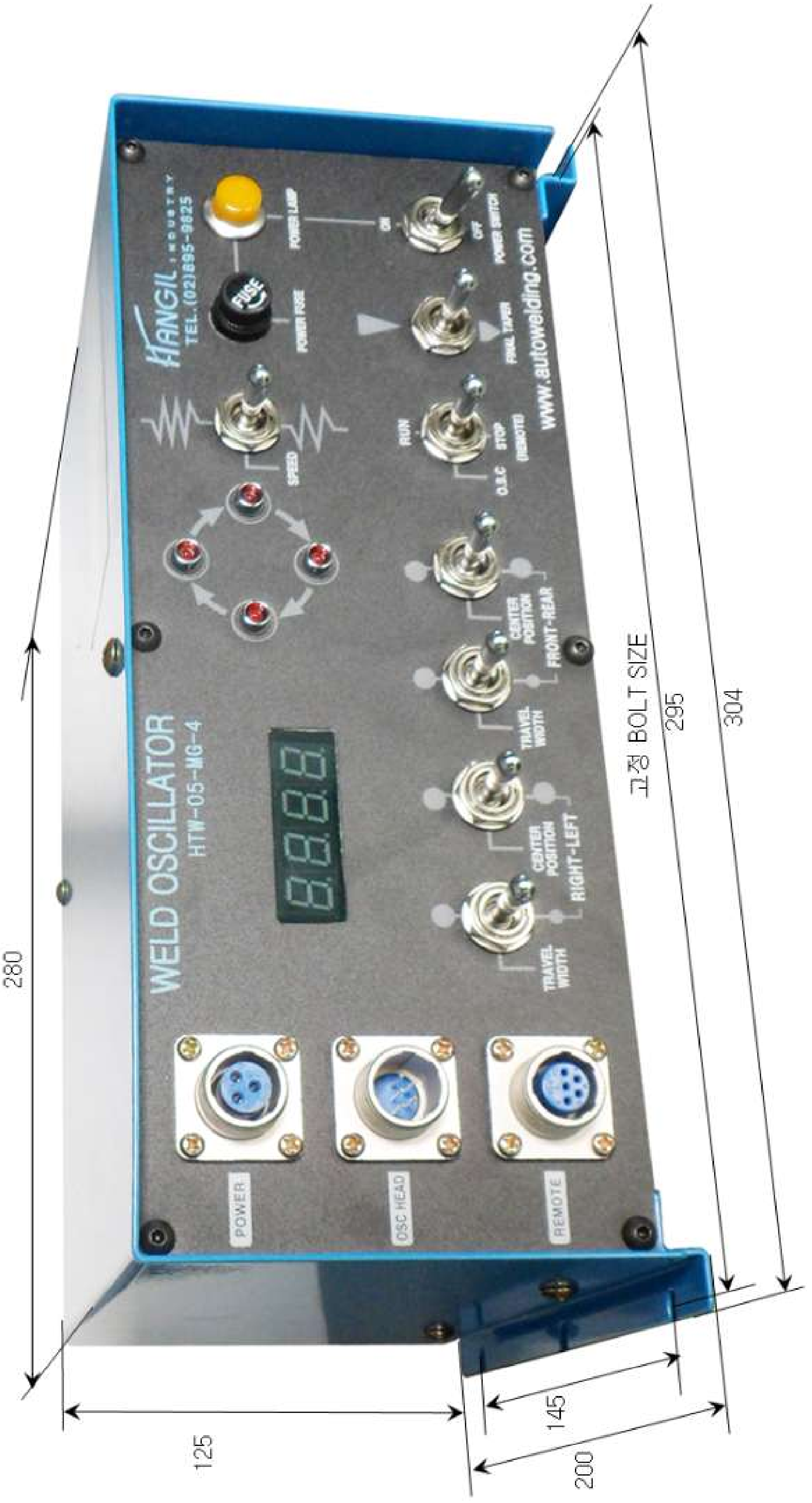
- 4 poles(A, B, C, D) should have the same gap by fine setting.





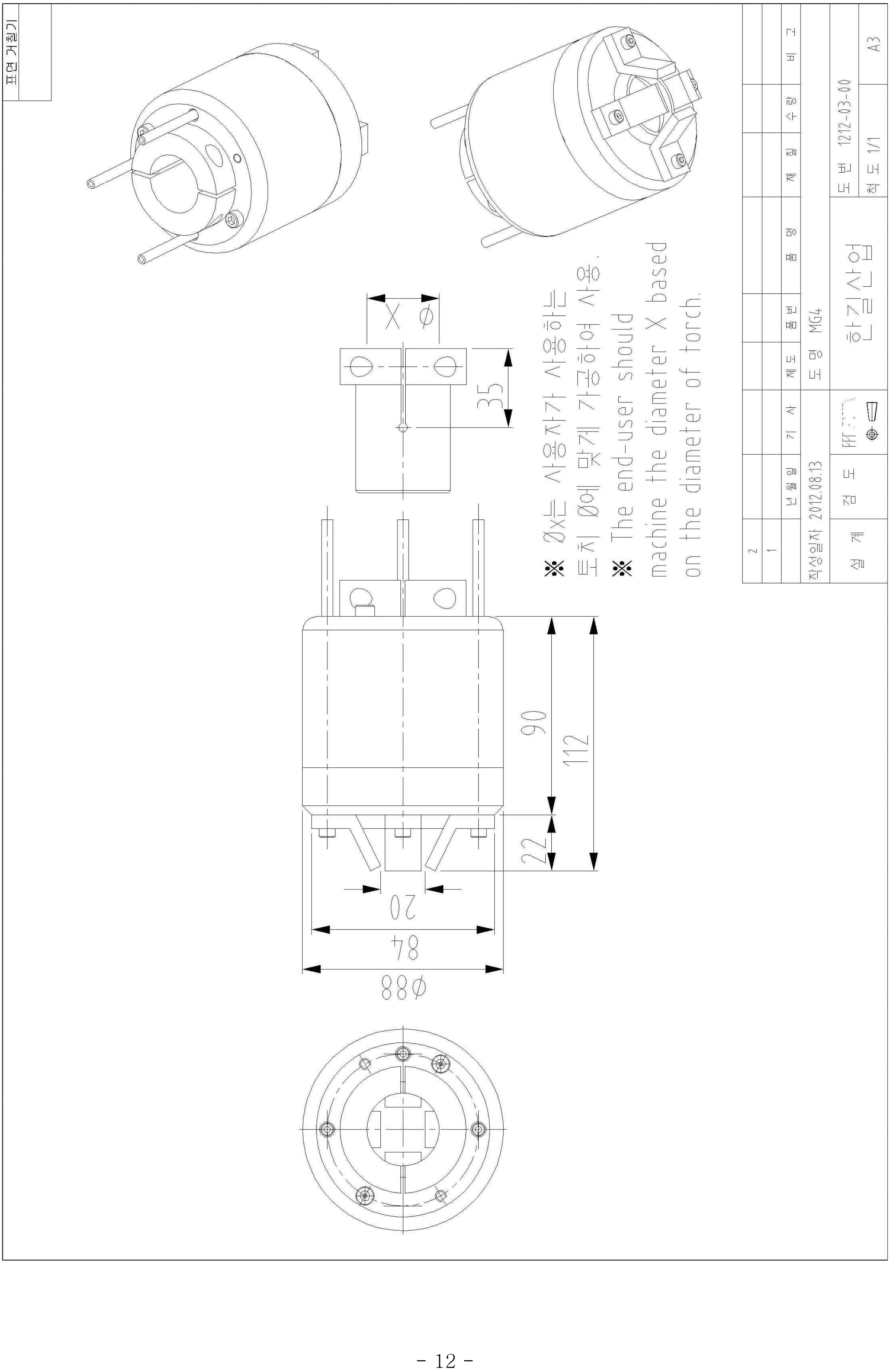
9. OUTLINE

9-1. Control box


HANGIL INDUSTRY
TEL.(02)895-9825
POWER LAMP
ON
OFF
POWER SWITCH
FUSE
POWER FUSE
FINAL TAPER
SPEED
RUN
STOP
O.S.C
(REMOTE)
www.autowelding.com
CENTER POSITION
FRONT-REAR
TRAVEL WIDTH
CENTER POSITION
RIGHT-LEFT
TRAVEL WIDTH
WELD OSCILLATOR
HTW-05-MG-4
POWER
OSC HEAD
REMOTE
고정 BOLT SIZE
295
304
280
125
145
200

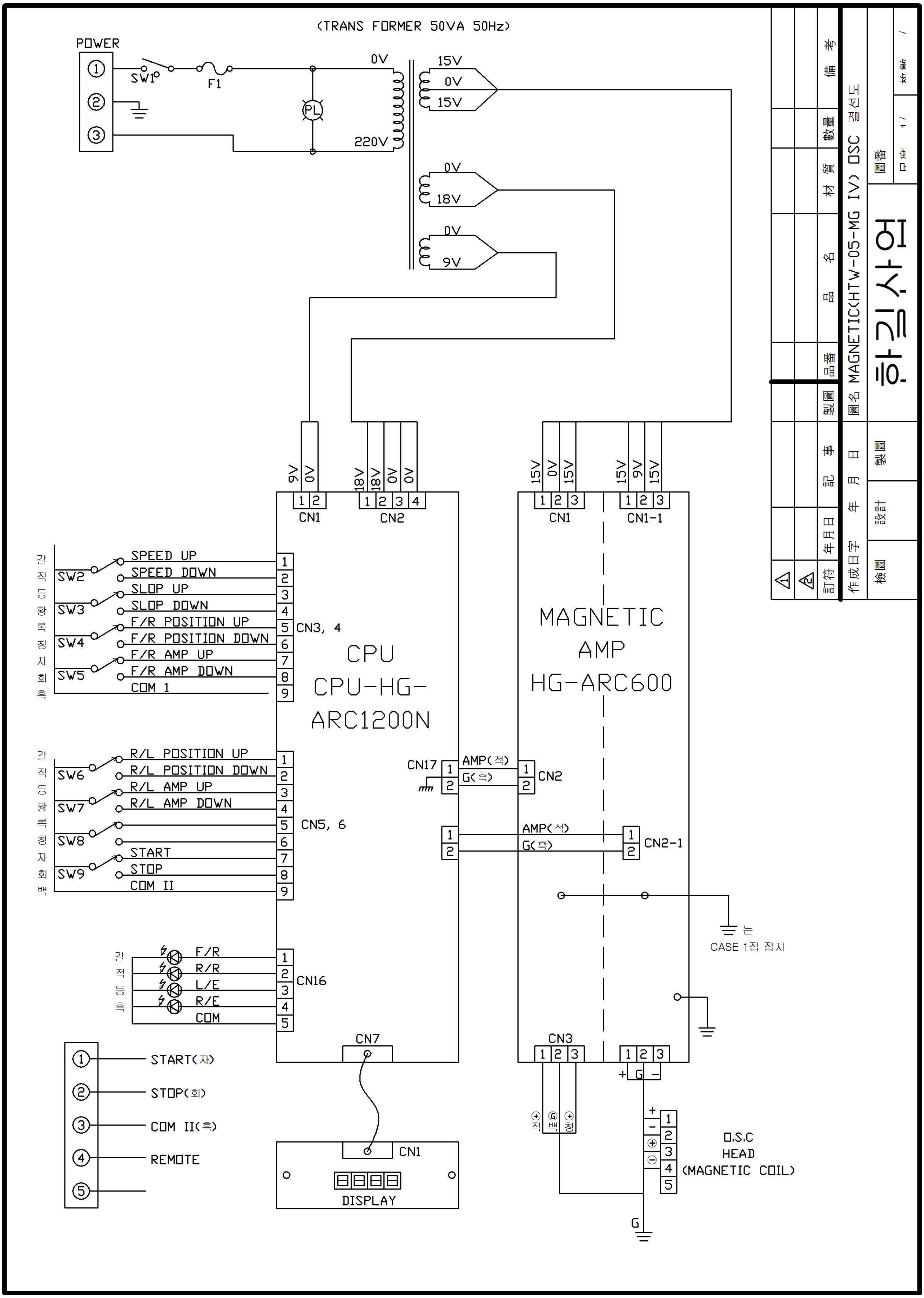
9-2. OSC HEAD

1) HTW-05-MG(IV)


표면 거칠기
X Ø
35
90
112
22
20
84
Ø88
2
1
년월일
기 사
제 도
품 번
품 명
재 질
수 량
비 고
작성일자 2012.08.13
도 명 MG4
도 번 1212-03-00
척 도 1/1
A3
설 계
검 도
한길산업

※ Øx는 사용자가 사용하는 토치 Ø에 맞게 가공하여 사용.

※ The end-user should machine the diameter X based on the diameter of torch.


(TRANS FORMER 50VA 50Hz)
POWER
①
②
③
SW1
F1
PL
0V
220V
15V
0V
15V
0V
18V
0V
9V
9V
0V
18V
18V
0V
0V
1 2
CN1
1 2 3 4
CN2
15V
0V
15V
15V
9V
15V
1 2 3
CN1
1 2 3
CN1-1
갈 적 등 황 록 청 자 회 흑
SW2
SW3
SW4
SW5
SPEED UP
SPEED DOWN
SLOP UP
SLOP DOWN
F/R POSITION UP
F/R POSITION DOWN
F/R AMP UP
F/R AMP DOWN
COM 1
1 2 3 4 5 6 7 8 9
CN3, 4
CPU
CPU-HG-ARC1200N
MAGNETIC
AMP
HG-ARC600
갈 적 등 황 록 청 자 회 백
SW6
SW7
SW8
SW9
R/L POSITION UP
R/L POSITION DOWN
R/L AMP UP
R/L AMP DOWN
START
STOP
COM II
CN5, 6
CN17
AMP(적)
G(흑)
CN2
AMP(적)
G(흑)
CN2-1
CASE 1점 접지
갈 적 등 흑
F/R
R/L
L/E
R/E
COM
CN16
CN7
CN3
1 2 3
+ G -
⊕ 적
Ⓖ 백
⊖ 청
① START(자)
② STOP(회)
③ COM II(흑)
④ REMOTE
⑤
CN1
DISPLAY
O.S.C
HEAD
(MAGNETIC COIL)
G
訂符 年月日 記 事 製圖
品番 品 名 材 質 數量 備 考
作成日字 年 月 日
圖名 MAGNETIC(HTW-05-MG IV) OSC 결선도
檢圖 設計 製圖
한길산업
圖番
매수 1 / 枚數 /

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