MAGNETIC ARC OSCILLATOR

MODEL: HTW-05-MG I
HTW-05-MG II
1. OUTLINE

Magnetic Oscillator does apply the magnetic power for oscillation of the welding, instead of the established mechanical oscillator. The inside of the head is wound with coil for making the electromagnetic force, and when the magnetic force approaches near the Arc stroked 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

<table>
<thead>
<tr>
<th>MODEL</th>
<th>HTW-05-MG(I, II)</th>
</tr>
</thead>
<tbody>
<tr>
<td>INPUT POWER</td>
<td>1Ø 220V 50/60Hz, 1A</td>
</tr>
<tr>
<td>CONTROL</td>
<td>DIGITAL</td>
</tr>
<tr>
<td>OSCILLATION SPEED</td>
<td>0.0 ~ 1000Hz(0 ~ 3,000osc/min)</td>
</tr>
<tr>
<td>TRAVEL WIDTH</td>
<td>ARC LENGTH 0~1:1MAX</td>
</tr>
<tr>
<td>CENTER POSITION</td>
<td>ARC LENGTH 0~1:1MAX</td>
</tr>
<tr>
<td>DWEL TIME</td>
<td>LEFT ~ 2.0sec. CENTER (unit : 0.1sec) RIGHT</td>
</tr>
<tr>
<td>MAGNETIC UNIT</td>
<td>MG-1 300 Gauss/max</td>
</tr>
<tr>
<td>(COOLING RATE 3ℓ/min. 3kg/cm²) OSCILLATION HEAD : WATER COOLING TYPE</td>
<td>MG-2 300 Gauss/max We have the unit for weaving &amp; preheating of the front &amp; the rear.</td>
</tr>
<tr>
<td>APPLICABLE PROCESS</td>
<td>GTAW, PAW, SAW, SPAY, TYPE, GMAW</td>
</tr>
</tbody>
</table>
3. STRUCTURE

3-1. STRUCTURE PRODUCTS

1) CONTROL BOX 1SET
2) MAGNETIC HEAD 1SET
3) POWER CABLE 1SET
4) CONNECTOR FOR REMOTE 1SET
4. EXPLANATION ON PART

4-1. CONTROL BOX
- The control box is consist 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

![Connector Diagram]

1) CN1:
connector for remote control box

2) CN2:
connector for Magnetic Head

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

Power Switch
- If the switch is ON, the power is supplied. When all the works is finished, the switch should be OFF.

Lamp for indication of power supply.
- If the lamp is lit, now the power is being supplied to the control.

Displayer for program of function.
- Here the parameters on operation can be inputted or saved. Please refer to CHAPTER 6. FUNCTION LIST

Oscillator RUN-STOP switch
- If the switch is positioned in RUN, the Oscillator does run as the programs.
  If it is in STOP, the operation is stopped.

Dwell Time-Left, Center & Right
(2.00 ~ 2.20 / 3.00 ~ 3.20 / 4.00 ~ 4.20)
- With this switch, the dwell time can be input. The user toggles up, so the dwell time is longer, and if down, the time is shorter.
- Dwell time set range is from 0.0 ~ 2.0 sec.
  *Setting unit: 0.1 sec.
    LEFT dwell time: 2.00 ~ 2.20
    CENTER dwell time: 3.00 ~ 3.20
    RIGHT dwell time: 4.00 ~ 4.20
TRAVEL WIDTH (6.00 ~ 6.99)
- The user toggles up; travel wider and the switch down is narrower.
- The range for travel width is max. 1:1 against the length of ARC. The display digit means the length is convert into %.

CENTER POSTION (500 ~ +599/-599)
- ARC position can be moved with this switch. If the switch is “UP”, the position does move to the right. If the toggles down, the ARC does to the left.
- The pole of the magnetic head should be located at the center of ARC, but in the other case the operator makes it by inputting + or – digit. The display digit is from 5.00 to +5.99 or 5.00 to -5.99, which means % against the length of ARC.

Speed (1.00 ~ 1.100 display)
- The oscillation speed is controlled with this switch; if the switch is pushed up, the digit does go up. For the toggle down, the number is also down. In this case the set digits show up on the Displayer. The displayed digit means oscillation frequency. Therefore, 1,000Hz means it takes 1sec for the pole of the head to return one time back.
## 6. FUNCTION LIST

<table>
<thead>
<tr>
<th>MODE</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>OSCIOLLATION SPEED(Hz) 1.00 ~1.1000, setting by 1Hz unit.</td>
</tr>
<tr>
<td>2</td>
<td>LEFT DWELL ON TIME 2.00 ~ 2.20 sec. setting by 0.1 sec unit</td>
</tr>
<tr>
<td>3</td>
<td>RIGHT DWELL ON TIME 3.00 ~ 3.20 sec. setting by 0.1 sec unit</td>
</tr>
<tr>
<td>4</td>
<td>CENTER DWELL ON TIME 4.00 ~ 4.20 sec. setting by 0.1 sec unit</td>
</tr>
<tr>
<td>5</td>
<td>CENTER POSITION MOVE 5.00 ~ +/−5.99</td>
</tr>
<tr>
<td>6</td>
<td>The vibration width setting shall be done by max. unit -1:1 and 1% according to Arc length. (Setting unit: 6.00 ~ 6.99)</td>
</tr>
</tbody>
</table>
7. OSCILLATION PATTERN PROGRAM

- There are eight patterns for oscillation according to the program.

Picture 1. It is a operation pattern when the DWEL TIME OFF “0” is set.

Picture 2. CENTER DWELL TIME : 0.1 or more setting.
LEFT, RIGHT, DWELL TIME : “0” setting.

Picture 3. LEFT, CENTER DWELL TIME : 0.1 or more setting.
RIGHT, DWELL TIME : “0” setting.

Picture 4. LEFT DWELL TIME : “0” setting
CENTER, RIGHT DWELL TIME : 0.1 or more
Picture 5. LEFT, RIGHT DWELL TIME : 0.1 or more setting.
CENTER DWELL TIME : “0” setting.

Picture 6. LEFT, CENTER, RIGHT
DWELL TIME : 0.1 or more setting.

Picture 7. LEFT DWELL TIME: 0.1 or more setting
CENTER, RIGHT DWELL TIME: “0” setting.

Picture 8. RIGHT DWELL TIME : 0.1 setting
LEFT, CENTER DWELL TIME : “0” setting.
8. INSTALLATION

8-1. HTW-05-MG-(I) (Standard (for narrow space & just for weaving))

1) Picture on full installation

OSC head must be earthed, so the user takes note not to damage the earth when the GTAW torch is mounted to the clamp unit. For example, if the earth is damaged, ARC strike between GTAW torch and OSC head may damage the OSC head during welding.
2) How to align the tungsten electrode point and the pole of electric magnetic power.

There is one bolt in the pole for fastening the pole. The bolt is lose. Then, adjusting for alignment of the tungsten point and the pole. After finishing the job, fasten the bolt again.
3) Side picture

There is some distance between the pole and the work-piece so that the bead does not touch the pole. (about 10mm).

In addition, the user should make some distance between the pole and torch for shielding.
4) Rear side picture

Make sure the installation is like the picture. The tungsten point should be located at the center of the pole.
5) Picture on the front
Make sure the installation is like the picture. The tungsten point should be located at the center of the pole.
8-2. HTW-05-MG-(II) (Weaving and preheating at the front & the rear.)

1) Installation
2) Front picture on installation
   - Make sure the distance between A and b is made same by adjusting the 4 bolts of the head.
3) Side Picture on installation

-Make sure the center of the tungsten meets the center of the pole precisely by adjusting the bolt.
8-3. HTW-05-MG-(II)-I (Only for preheating of the front & the rear.)

1) Installation

- Angle or the front / rear setting bolt
- Chilling pipe
- Fixed clamp
- Power cable
- Angle setting bolt
- Osc head
- Magnetic pole
2) Welding-traveling direction
   a) left → right
b) right → left
3) Front picture on installation

- The electrode gap of left to right is adjusted to be equivalent to the width of A to B.
4) Side Picture on installation
5) See the picture for installation below.

The bolt for setting the gap of magnetic pole
Reset according to torch shield cap.
9. OUTLINE

9-1. Control box
9-2. OSC HEAD

1) HTW-05-MG(I)
2) HTW-05-MG(II)

※ Øx는 사용자가 사용하는 툴에 맞게 기울여 사용.

※ The end-user should machine the diameter X based on the diameter of torch.
3) HTW-05-MG(Ⅱ)-I
REMOTE CONTROL CONNECTOR 연결도

1. COM
2. UP SPEED
3. DOWN
4. UP DWELL TIME LEFT
5. DOWN
6. UP DWELL TIME RIGHT
7. DOWN
8. UP DWELL TIME CENTER
9. DOWN
10. LEFT CENTER POSITION
11. RIGHT
12. UP TRAVEL WIDTH
13. DOWN
14. RUN OSC START
15. STOP
16. COM

作成日名: 不明

도명: HTW-05-MG1 REMOTE 연결도

検定 설계 제도: 不明

한길産業

도번

적도: 不明

数: 不明
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