WELD OSCILLATOR

MODEL : HTW-05-AN

1. OUTLINE

 - It is a mechanical oscillator to get the following welding;

1) To get the bead clean and uniformed.
2) To get the penetration uniformed.
3) It is a proper solution to get a good back bead in the thin circle welding, because the head center is penetrated thin.
4) To get multi layers effects with one welding.
5) The Pool is stable.
6) Have no undercut and overlap by spreading the arc heat in uniformity to both sides.

1-1. Weaving Parameter Program

1) 4 weaving patterns can be programmed/memorized and call out for repeat welding

   One pattern can be input in the parameters: speed, weaving width, dwell time.

2) The memorized weaving pattern from 0 to 3 the operator wants can be selected with the outside connecting S/W

   or relay connecting to the other unit or through the remote control box(option), with which the operator can select

   the other weaving patters for 2nd layer during the welding.

1-2. OSCILLATION pattern select mode (option)

 * If the operator does not select the memorized weaving pattern and the power is on, the Oscillator is programmed

   and set to operate with the memorized 0 pattern under Auto Mode

1) If the operator does select the pattern through the remote control box or outside unit and then position the below

   toggles S/W to the "RUN", the Oscillator will work on.

RUN : the Oscillator works
Stop : the oscillating stops

OSCILLATOR RUN – STOP BUTTON

 Therefore only one pattern, O, should be used without the remote control box or the outside connecting unit.

1-3. OSCILLATION weaving pattern display

1) The selected weaving pattern No.(0-3) is displayed at the left side during the Run mode.

2) If the weaving parameter is changed, the changed pattern No will be displayed after 20 sec.

2. STANDARD SPECIFICATION

TYPE	ANGULAR VIBRATION		
MODEL	HTW-05-AN		
OSCILLATION: Parameters MEMORY	4 patterns memorized(OPTION)		
OSC. FREQUENCY	0 ~ 250 CYCLE		
CENTER MOVING RANGE	0 ~ 360°		
VIBRATING RANGE	SET UNIT 0.1° BETWEEN ±0~50°		
DWELL TIME	LEFT	SETTING RANGE 0~2.0 sec SETTING UNIT BY 0.1SEC	
	CENTER		
	RIGHT		
INPUT POWER	1∅, 220V, 60Hz, 50Hz, 2A		
LOADING CAPACITY	MAX. 3KG (JUST MOUNT TORCH)		
HEAD SIZE	L:240 X W:100 X H:90		
HEAD WEIGHT	3Kg		
CONTROL BOX SIZE	L:300 X W:200 X H:110		
CONTROL BOX WEIGHT	7KG		

* The figure in the (   ) means the value selected when the dwell time function works.

3. STRUCTURE

3-1. STRUCTURE PRODUCTS

1) CONTROL BOX   1 SET(POWER CABLE : 1.5M x 1EA)
2) OSCILLATION SLIDE   1 SET(CONNECTION CABLE 2M x 1EA)
3) REMOTE CONNECTOR   1EA(without cable)

REMOTE CONTROL BOX

CONTROL BOX

OSCILLATION HEAD

4. EXPLANATION ON PART

4-1. CONTROL BOX

- The control box is consisting of the motor control and sequence and the cable connectors are used for easy maintenance.
- The front panel on the control box has the function switches needed to operate the oscillator. The operator should understand this manual fully, before operation.

4-2. OSCILLATION SLIDES

- It is made up the motor and sensor and the model no. HTW-05-A has the oscillation adjustor. Please use the knob for adjusting the width.

4-3 CONNECTOR for outside connecting

① CN1 : connector for power supply.

② CN2 : HEAD-connecting CONNECTOR

③ CN3 : REMOTE CONTROL BOX connecting CONNECTOR

4-4 REMOTE CONTROL BOX(OPTION)

- The Control box with function s/ws can control the unit

5. EXPLANATION ON FUNCTION SETTING FOR OPERATION
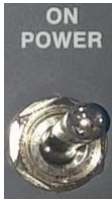
POWER ON& OFF SWITCH
- If power is on, the lamp is on.
- When working is finished, the power should be off.

Lamp for Power
- If the lamp is lighting on, the power is being supplied
.

OSCILLATOR RUN - STOP BUTTON
- The toggle s/w is for operation mode. If it is located at the mode "RUN" the unit will work and do oscillation.
- If it is placed at "STOP", the oscillating will stop and the torch will return to the center position
- In order to use the remote control box or outside control mode, the s/w should be located at the mode "STOP"

CENTER POSITION BUTTON
- If the toggle s/w is placed at up-position, the torch will move to right. If it is down, the torch will move to left. When it is being operated, the moved location is on the display in the program data
- The center position can be moved in the range of 360°, within the range the torch can be located at any point. Before using the function, check out any interruption. The setting can be done by the unit: 0.1°

OSCILLATING WIDTH
- The each width can be input in Pattern NO from 0 to 3
- The toggle s/w is for adjusting of vibrating width of torch. If the s/w is up, the width will increase. If down, it is narrow. When it is used, the value of vibrating width is on the display.
- Vibrating width range is adjusted in ±0 ~ 50°. It means the torch is weaved between 0 ~ 100°, of which setting unit is by 0.1°.

WEAVING SPEED

- The each speed can be input in the Pattern No. from 0 to 3
- It is the S/W for adjusting the weaving speed. If it is UP position, the weaving speed is going up. The s/w down position means the speed down. The real torch weaving frequency is 0-250/min. When it is working, the speed setting value is on the display.
- Setting range within 0 ~ 100% and the unit is set by 1%

DWELL TIME SETTING: LEFT, CENTER, RIGHT)

- The Dwell time can be set in the each Pattern No from 0 t 3
- These toggle S/Ws are for dwell time setting: left, center, right. The operator can set the stopping time at the left, right, center, by making it up or down. If it is up, the stopping time will be increased and vice versa.
- Setting unit by 0.1 sec.

2000 ~ 2020 : LEFT dwell time
3000 ~ 3020 : RIGHT   dwell time
4000 ~ 4020 : CENTER dwell time

PROGRAM DATA DISPLAY on RUN mode

- On RUN mode the programmed real data are displayed .
  The operator can check the programmed data by doing ON/OFF at each mode.

● PROGRAM AND ITS CORRECTION

- 4 weaving patterns can be set and memorized.

  At first, go to 0-3 and then select one of them with s/W. set and memorize the parameters

- The setting can be done under RUN mod, by using the toggle up or down for parameter setting or its correction.

  The parameters data are displayed when to use the S/W. Check the parameter or patterns you want and then input the parameters in them as you want.

6. FUNCTION LIST

MODE	EXPLANATION ON FUNCTION
1	OSCILLATION SPEED IS SET　: 0 ~ 250TIMES AND SETTING UNIT BY 0.1%
2	LEFT DWELL- ON -TIME 1000 ~ 1020SEC (SETTING UNIT BY 0.1SEC) 0 .0 ~ 2.0 sec
3	RIGHT DWELL- ON -TIME 3000 ~ 3020SEC(SETTING UNIT　0.1 SEC) 0 .0 ~ 2.0 sec
4	CENTER DWELL ON TIME 1000 ~ 1020SEC(SETTING UNIT BY 0.1 SEC) 0 .0 ~ 2.0 sec
5	CENTERRING MOVE WITHIN 0 ~ 360° BY UNIT 0.1°.
6	OSCILLATING RANGE SETTING WITHIN ±0 ~ 50°, BY SETTING UNIT 0.1°

7. OSCILLATION PROGRAM

- There are 8 oscillation programs according to how to use. This model does work on the oscillation under the 3 point STOP.
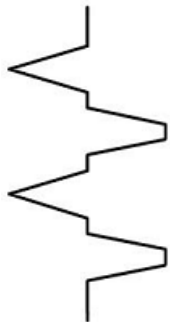
TRAVEL WIDTH
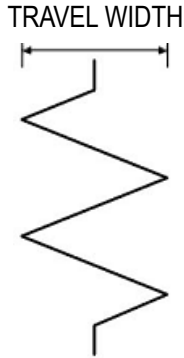
Picture 1. This pattern is made under STOP switch OFF.
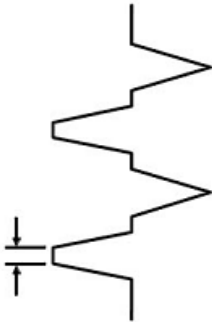
The above gap in the picture can be adjusted with LEFT STOP time.

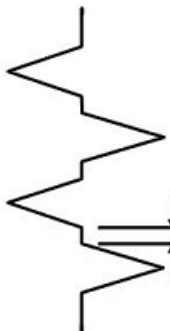Picture 2. This pattern is done under the following conditions;
  • STOP switch is ON
  • The dwell time;
    - LEFT and CENTER STOP is set to OVER 0 sec
    - RIGHT STOP is set 0 sec

The above gap in the picture can be adjusted with RIGHT STOP time.

Picture 3. This pattern is operated under the following conditions;
  • STOP switch is ON
  • The dwell time;
    - RIGHT and CENTER STOP are set to be OVER 0 sec
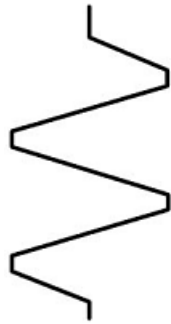   - LEFT is set 0 sec

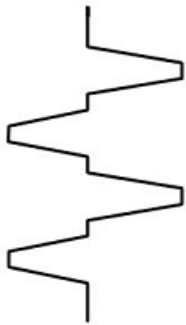The gap can be adjusted with CENTER STOP time.

Picture 4. It is operated ;
  • STOP switch is ON
  • The dwell time;
    - LEFT and RIGHT STOP is set 0 sec
    - CENTER STOP is set OVER 0 sec

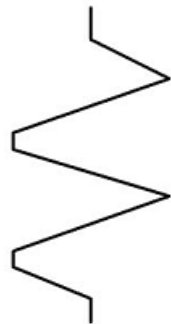Picture 5. The pattern is made under the following conditions;

• STOP switch is ON
• The dwell time;
  - LEFT and RIGHT STOP are set OVER 0 sec
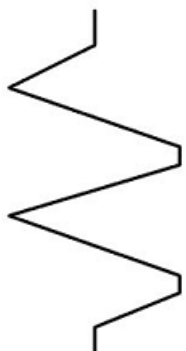 - CENTER STOP is set to be 0 sec

Picture 6. The patterns is made under the follwings;
  • STOP switch is ON
  • The dwell time;
    - LEFT and CENTER STOP areis set 0 sec
    - RIGHT STOP is set OVER 0 sec

Picture 7. For making the pattern, there are the following conditions
  • STOP switch is ON
  • The dwell time;
    - LEFT and CENTER STOP is set 0 sec
    - RIGHT STOP is set OVER 0 sec

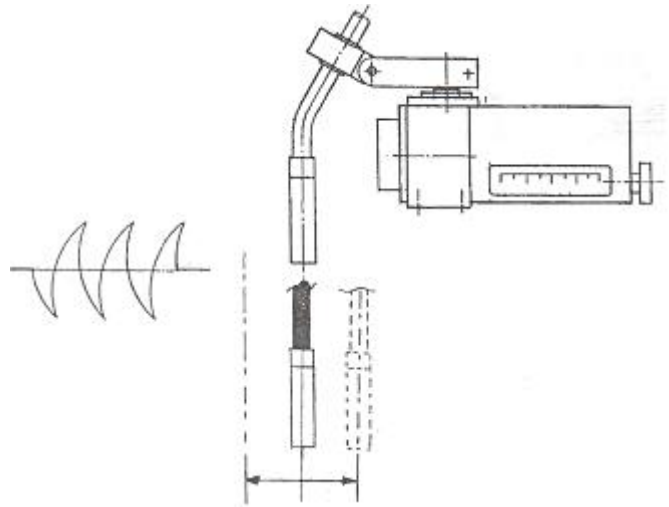Picture 8. For this pattern, there are some conditions;
  • STOP switch is ON
  • The dwell time;
    - LEFT and CENTER STOP is set 0 sec
    - RIGHT STOP is set OVER 0 sec

8. INSTALLATION

- The user makes the installation of the oscillator like the picture.

7-1 HORIZENTAL INSTALLATION

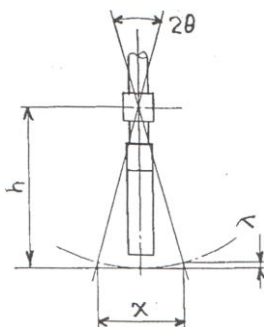- The torch is vibrated from left to right. The following installation is applied to both HTW-05-A and B.

7-2 VERTICAL INSTALLATION

- Since the torch does work in the horizontal, there are likely to be gap wider at the both ends between the work-piece and torch. Therefore, check out the following calculation formula for better operation.
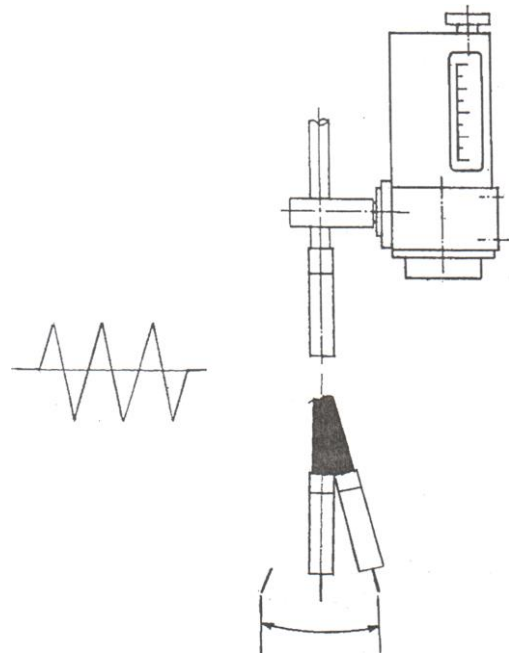
※ Application for vertical installation(for HTW-05-A and HTW-05-B only)

$$\theta = COS^{-1} \frac{h - \lambda}{h} \qquad \theta = COS^{-1} \frac{h - \lambda}{h}$$

$$h = 130mm \quad \lambda = \pm 0.25mm \rightarrow 0.5mm$$

$$\theta = COS^{-1} \frac{130 - 0.5}{130} = \pm 5.026°$$

$$\chi = 130 SIN 5.026 = \pm 12mm$$

9. OPERATION

- The oscillator is completely installed and then check out the connection for cable. If you finish the check-out, please operate the unit.

9-1. Operation

1) Power switch "ON"-the power LAMP is lit
2) The torch is poisoned in the center
3) Dwell timer is adjusted. The weaving width is set as the operator.
4) Oscillation width is adjusted with the knob in the oscillator(HTW-05-A)
5) Vibration speed is also adjusted.
6) START "ON"
   *Check out if the oscillation conditions are set properly according to the welding parameters.
7) Finish all the welding job and then switch "OFF"

9-2. Weaving Parameter Program

1) 4 weaving patterns can be programmed/memorized and call out for repeat welding

   One pattern can be input in the parameters: speed, weaving width, dwell time.

2) The memorized weaving pattern from 0 to 3 the operator wants can be selected with the outside connecting S/W

   or relay connecting to the other unit or through the remote control box(option), with which the operator can select

   the other weaving patters for 2nd layer during the welding.

9-3. OSCILLATION pattern select mode (option)

* If the operator does not select the memorized weaving pattern and the power is on, the Oscillator is programmed

   and set to operate with the memorized 0 pattern under Auto Mode

1) If the operator does select the pattern through the remote control box or outside unit and then position the below

   toggles S/W to the "RUN", the Oscillator will work on.

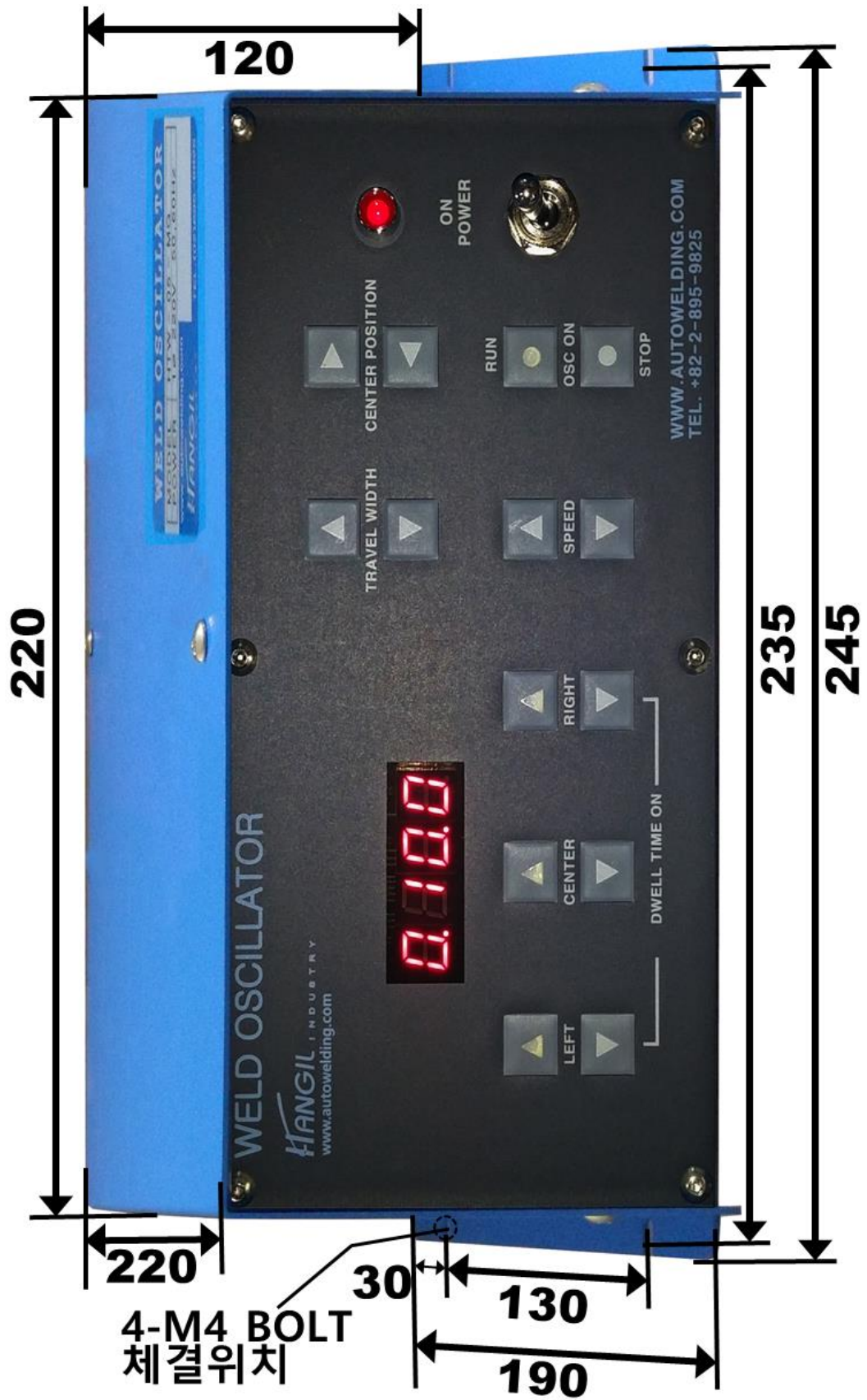RUN : the Oscillator works
Stop : the oscillating stops

OSCILLATOR RUN - STOP BUTTON

Therefore only one pattern, O, should be used without the remote control box or the outside connecting unit.

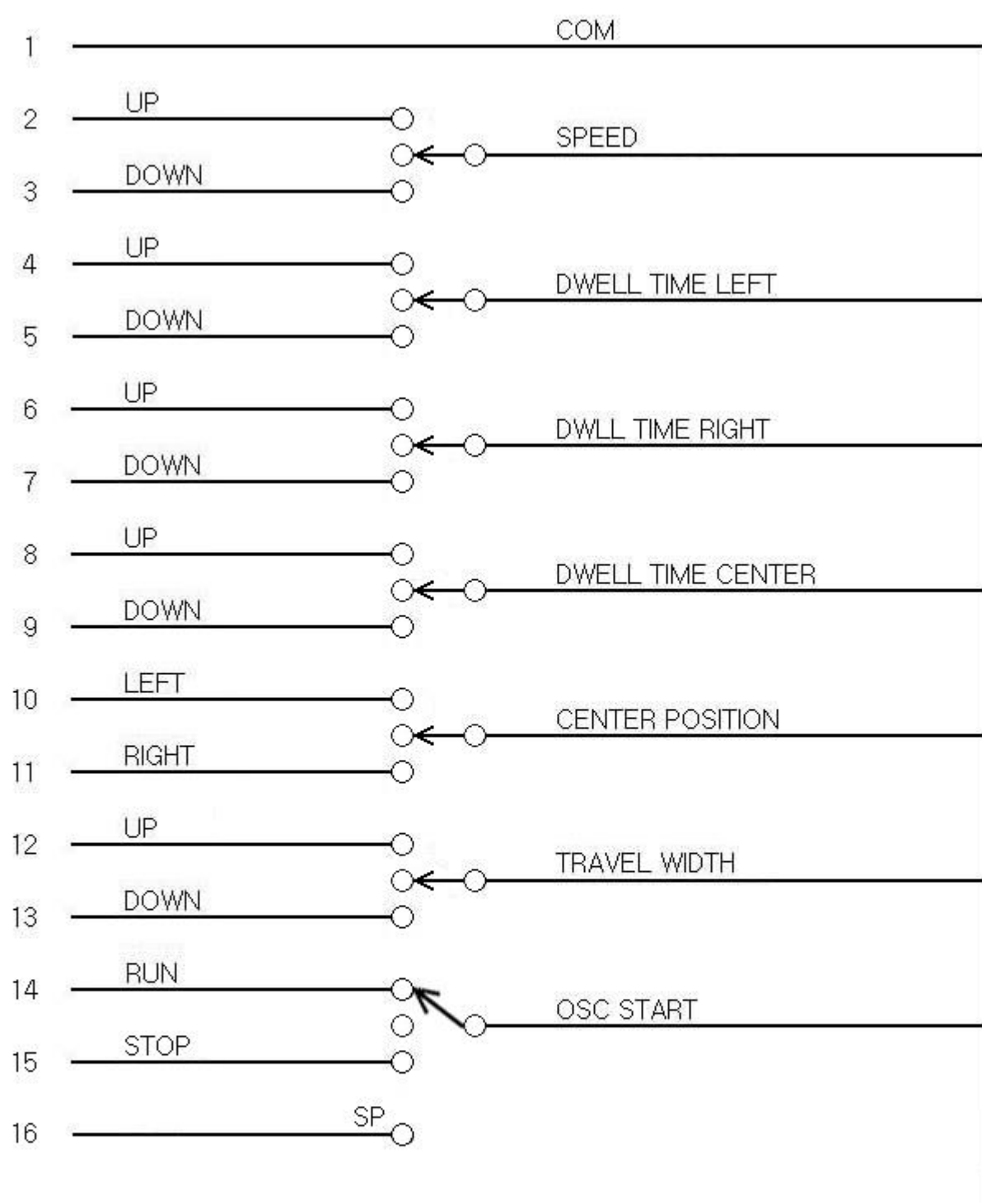## 9-4. OSCILLATION weaving pattern display

1) The selected weaving pattern No.(0-3) is displayed at the left side during the Run mode.

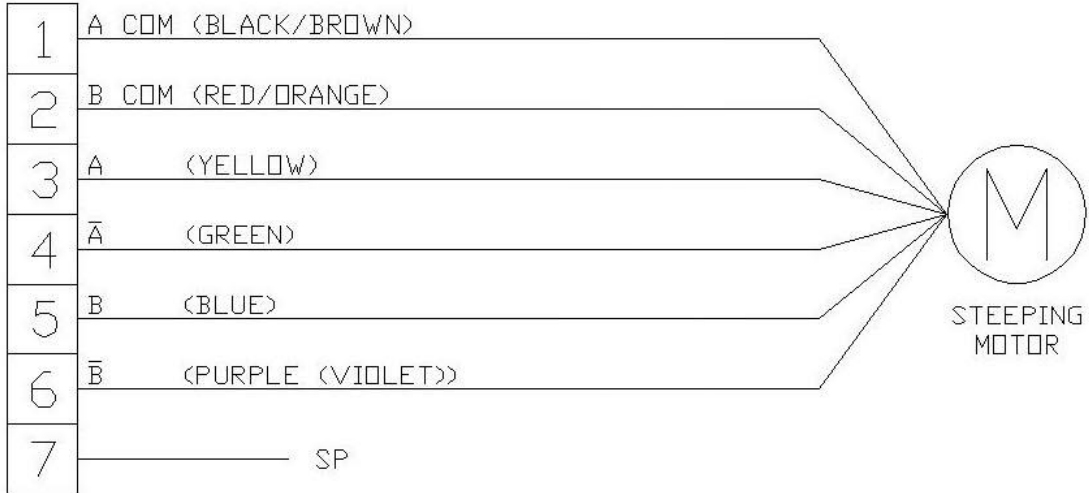2) If the weaving parameter is changed, the changed pattern No will be displayed after 20 sec.

10. OUTLINE

REMOTE CONTROL CONNECTOR 결선도

			COM
1			

1 —————————————————————————————— COM

2 — UP —————————○

SPEED

3 — DOWN —————————○

4 — UP —————————○

DWELL TIME LEFT

5 — DOWN —————————○

6 — UP —————————○

DWLL 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 — SP —————————○

作成日字			도 명 HTW-05-AN REMOTE 결선도		
검도	설계	제도	한길産業	도번	
				척도	매수

	1	A COM (BLACK/BROWN)
	2	B COM (RED/ORANGE)
	3	A (YELLOW)
	4	Ā (GREEN)
	5	B (BLUE)
	6	B̄ (PURPLE (VIOLET))
	7	SP

STEEPING MOTOR

MAKER	ORIENTAL	JAPAN SERVO	SANYO DENKI
A COM	YELLOW	RED	BLACK
B COM	WHITE	BLUE	WHITE
A	BLACK	BLACK	RED
Ā	GREEN	BROWN	YELLOW
B	RED	YELLOW	BLUE
B̄	BLUE	ORANGE	ORANGE

訂符	年月日	記　事	製圖	品番	品　　名	材　質	數量	備　考
⚠1								
⚠2								

作成日字　　年　月　日　圖名 _HTW-05-AN MOTOR CONNECTOR

檢圖	設計	製圖	한길산업	圖番
				尺度　1/　　枚數　/

MEMORY CONNECTOR
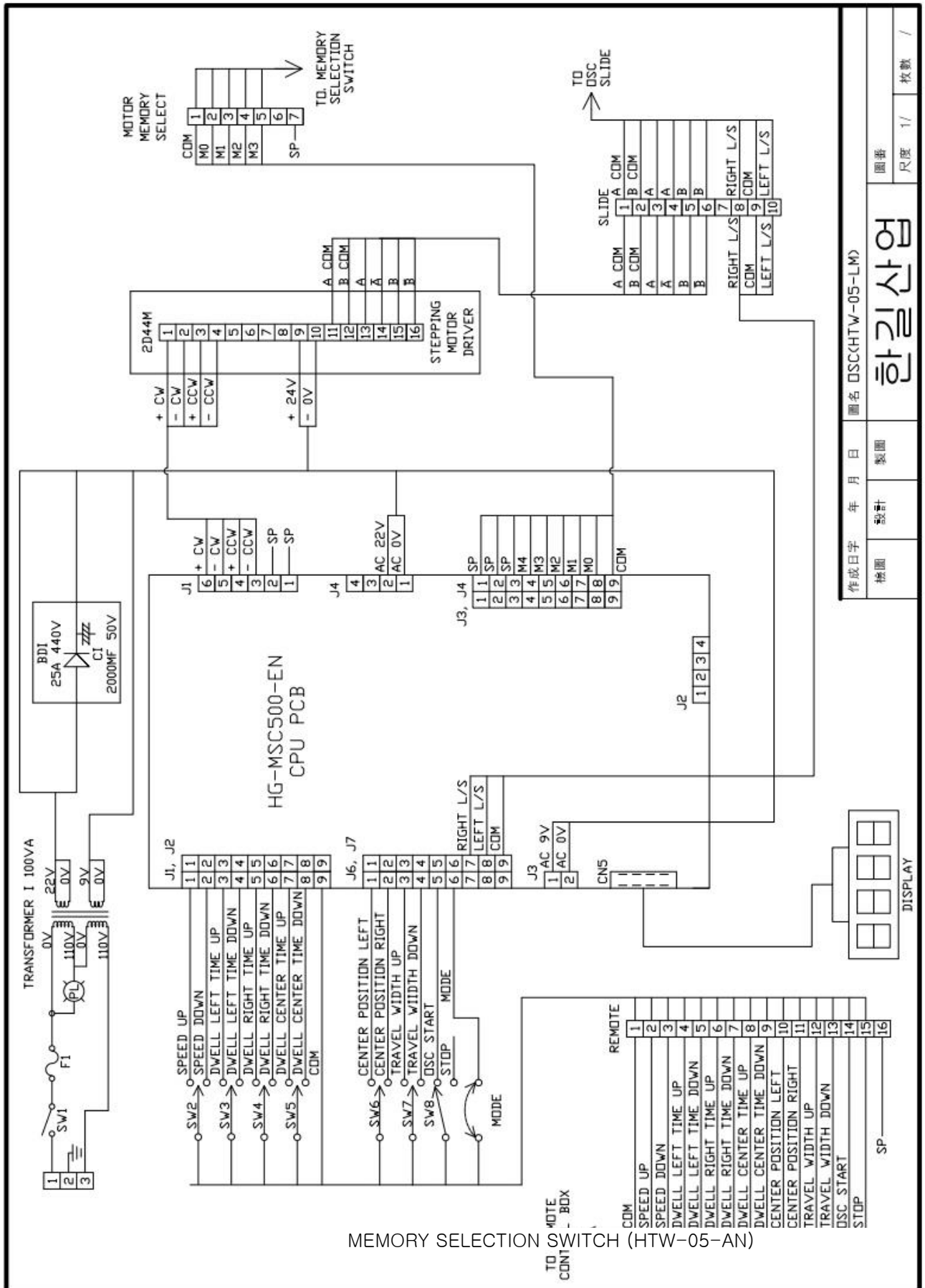
COM

1	M1
2	M2
3	M4
4	M8
5	
6	
7	

메모리 선택 BOX

0~9 선택

HANGIL
I N D U S T R Y

575-20, Gwangmyeong 7-dong, Gwangmyeong-si, Gyeonggi-do, Korea

T E L   :   82-2-895-9825

F A X   :   82-2-894-6771

H - Page   :   www.autowelding.com

E -Mail   :   autowelding @ autowelding.com