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INVERTER AC/DC TIG WELDER **OMEGA 350DT/500DT**

OPERATION MANUAL



SAMSUNG wel-tech

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◀ Guarantee Certificate ▶

- The warranty of products shall confirm to the specification set forth in the article 2 "Configuration and Specification" for 12 months from the date on Bill of Lading.
- The extent of seller's liability under this warranty shall be limited to the repair or replacement as herein provided of any defective parts thereof.
- The warranty does not extend to following occasion :
 - Subjected to mis-use, neglect, accident or abuse.
 - Improperly repaired, installed, transported, altered or modified.
 - Used in violation of instructions furnished by user's manual.

Warranty card

Model		
Serial No.		
Manufacture Date		
Ship Date		
Seller's Name	SAMJIN WEL-TECH	
Client Name	Company	
	Person	

1. Warranty period is 12 months From the date on Bill of Lading.
2. Except For the express limited warranties set forth in this guarantee certificate, SAMJIN WEL-TECH has no other liability.
Certified by SAMJIN WEL-TECH

Note :

1. The "Guarantee Certificate" shall practically be effected with seller's signature after fill in blank of Warranty Card.
2. Users has to pay attention to the subjects set forth Article 3 "Setting" when installing the main power units and accessories.
3. SAMJIN has no liability of accessories, which are consumable and not to manufactured by SAMJIN WELTECH.

◀ Contents ▶

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Be sure to read the operating manual carefully before use and you will have the advantages of increase of product life and welding efficiency.

1. Product description

AC/DC TIG 350DT/500DT is an invert AC/DC pulse TIG welding machine by the use of I.G.B.T. available to weld with stable arc by both AC and DC and specially good to weld thin plate of aluminium and magnesium.

2. Configuration and specification

2-1. Configuration and standard accessory

ITEM \ Type	350DT	500DT	QTY
WELDING POWER	AC/DC 300A	AC/DC 500A	1
TORCH (SET)	Air cool 350A 10M	Air cool 500A 10M	1
Base metal CABLE	22SQ 2m	38SQ 2m	1
Chuck, Body	2.4	2.4	3
Tungsten	2.4	2.4	3
Ceramic	6	8	3
Gas gauge	ARGON	ARGON	1
Hose	2M	2M	1

2-2. Rating Specification

Item \ Type	350DT	500DT	
Input voltage	220/380/440V 1 Φ , 3 Φ \pm 10%		
Input Power	10.5 kVA	19 kVA	
Frequency	50/60 Hz		
Output current	TIG	5~350 A	5~500 A
	Stick	10~200 A	10~300 A
Max. no load voltage	63 V	70 V	
Rated load voltage	20 V	24 V	
Service factor	40 %		
Primary crater current adjustment range	Same as Welding current adjustment range		
Pulse current adjustment range	Same as Welding current adjustment range		
Current up/down time	0.1 ~5 second		
Pulse frequency	Low	0.5~25 Hz	
	High	10~500 Hz	
Gas adjustment time	Start	0.1 second (Internally adjustable)	
	End	3~25 sec	
Pulse width adjustment	15~85 %		
AC cleaning adjustment range	\pm 10~50 %		
Dimensions (WxDxH)	380 \times 540 \times 600	380 \times 540 \times 600	
Weight	54 kg	67 kg	

3. Setting

3-1. Setting of welding machine

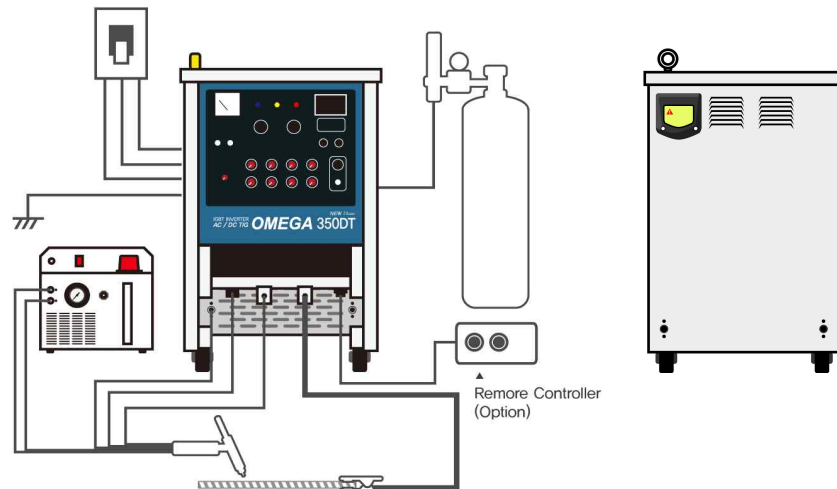
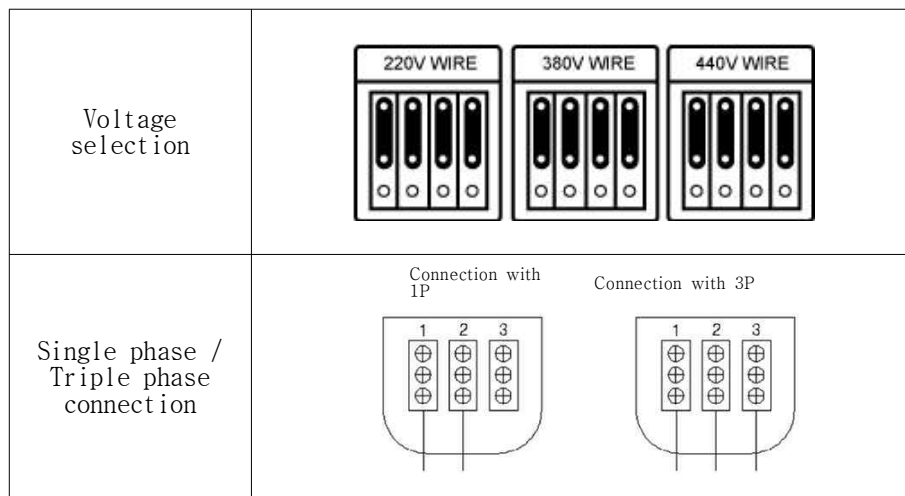


fig 1. Setting drawing



Drawing 2. Backside wiring diagram

3-2. Setting place

- 1) Place within the dry house, over 30cm far from wall.
- 2) Place to keep out of direct light and rain and wind.
- 3) Place with ambient temperature of - 10~40℃
- 4) Place below 1000meters above the sea.

3-3. Notices of earth

- 1) Be sure to do construction work for earth because welding machine without earth, making current to the case, causes safety accident and unstable movements.
- 2) How to earth is to connect over 8mm of the conducting wire for earth with the terminal marked "earth". Be sure to turn off the switch of switch board before connecting the conducting wire for earth when earthing.
- 3) Put base metal on insulator such as wood and put base metal to earth when working.
- 4) Connect both earths with cable in a parallel circuit so that leakage current may flow to the cable. If there is such a space leakage current flows, as swimming pool and pond between earth of power switchboard and earth of welding machine.

3-4. Setting capacity of power source

This welding machine should be used under rated input voltage. Welding machine, equipped with building - out network for input voltage, normally works when input voltage is within range of ±10%. Excess of this range leads to troubles with welding machine.

3-5. Protection against wind and ventilation

When you use welding machine at windy place or heated place out of doors or in the current of electric fan indoors set up screen for protection against wind so that wind may not get to arc part directly.

3-6. Argon gas

Use argon gas specified for the purpose of welding for the quality of welding.

3-7. Connection of electrical system (Turn off the switch of switch board)

Even a bad connection can not materialize satisfactory results from welding. So all the connected lines are firmly tightened by tool.

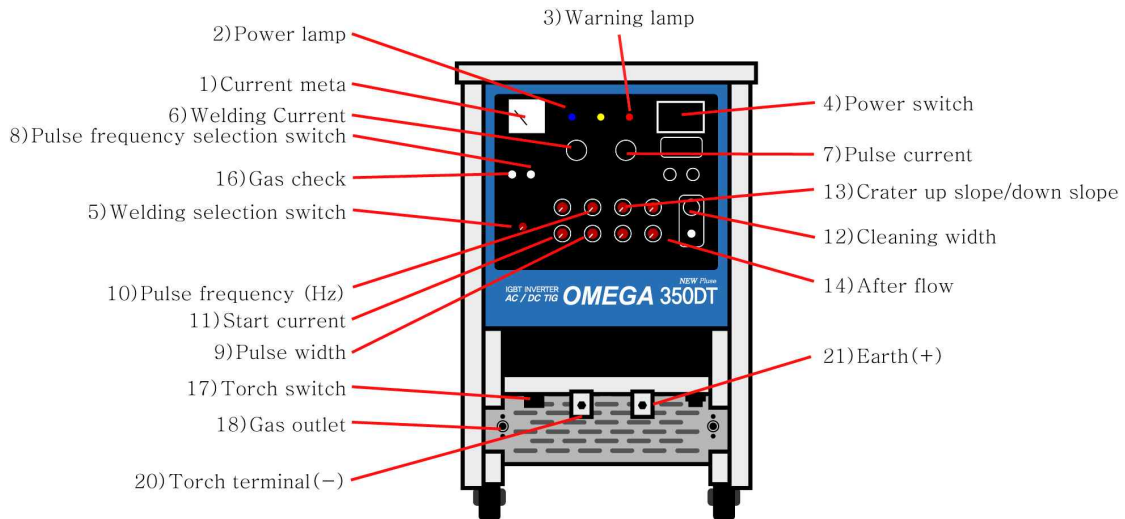
- 1) Connection of input power source : Refer to drawing #2 for connection. Install NFB for safety. Install earth leakage breaker to perceive over 30mA at least in case of installing it.
- 2) Connection of output side : Referring to drawing #1, connect torch with the cathode(-) and base metal with the anode (+).
- 3) Earth: Earth terminal is on the backside of invert welding machine. Be sure to use the leading wire of over 5.5 SQ for connection.
- 4) If you use welding machine together with engine generator, you are recommended to engine generator having larger capacity than input power source presented on 2-2 of rating specification. If output voltage of engine generator is not stable, detection circuit for abnormal voltage of welding machine starts to work and stops welding machine. Delivery of the momentary and excessive voltage onto semiconductor turns welding machine into the cause of troubles.

(Exhibit) Power equipment capacity and connection cable

Item \ Type	350DT	500DT
NFB	50 A	75 A
Primary cable	Over 8SQ	Over 14SQ
Earth cable	Over 5.5 SQ	

4. Handling and operation

4-1. Front panel structure and name



4-2. Function and operating description

1) Current meter (current) : Current meter shows output current when welding.

Power lamp (power) : Lamp is on when inputting power into instrument.

Ready lamp (Ready) : Lamp is on when ready for welding.

Warning lamp (warning) :

① Abnormal power - Lamp is on (stop) If input voltage falls more than 20% from rating voltage.


② Overload - Lamp is on (stop) when welding current rising sharply.

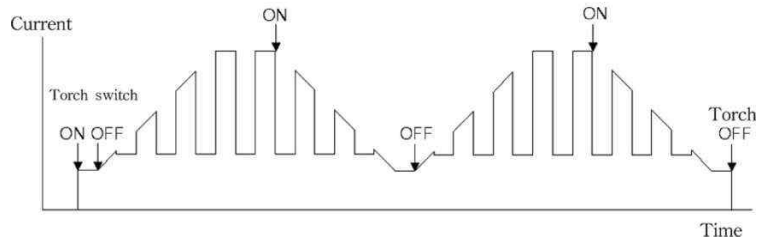
③ Abnormal temperature - Lamp on (stop) when temperature within instrument goes up over 85°C and practicable to use again when the lamp goes out after several hours.


5) Power switch - Power switch turns on / off welding machine and the switch is turned off when overloading.

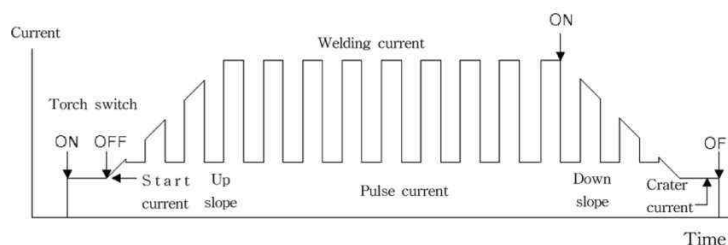
6) Welding selection switch (Welding selection)

① No carter () - Be in movement when torch switch is on.

② Carter Being () - Carter current flows out when pressing torch switch and then welding is made with welding current when releasing the switch. Re-pressing switch generates carter current and re-releasing switch makes welding off.

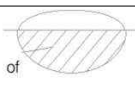
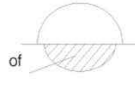


③ Carter repeat () - Types of carter are kept repeatedly. If you want to make it off, You put torch far from the base metal.



④ Manual welding (stick) - Stick is used for general arc welding. Holder is connected with the cathode (-).

- 7) Welding current : Welding current is used to adjust current for welding.
- 8) Pulse current : Pulse current is used to adjust current of pulse.
- 9) Pulse frequency selection switch (Frequency selection)
 - ① High - Adjustment for 10 - 500Hz
 - ② Low - adjustment for 0 - 25Hz
 - ③ None -When no pulse being used
- 10) Pulse width : Pulse width can adjust width of pulse.
- 11) Pulse frequency : Pulse frequency is used together with frequency selection switch.
- 12) Start current : Start current adjust start current output when torch switch is on.
- 13) Cleaning width : Cleaning width is in movement only when setting AC.

Graduation	Melt in amount of welding rod	Height of welding bead	Width of welding bead
0 ~ -5	Wide, Shallow	Low	Getting wider Melt in amount of welding rod 
0 ~ 5	Narrow Deep	High	Getting narrow Melt in amount of welding rod 

- 14) Up/down slope : Adjust time to increase (up) from start current to welding current and time to decrease (down) from welding current to crater current when selecting crater.
- 15) After flow : Adjust time of flow gas more out after finishing welding.
- 16) Air/ water cool : Water cool lamp is turned on when selecting water cool and cool torch by water cool.
- 17) Gas check : If parting the switch on gas, comes out regardless to torch switch. Set up the switch in the opposite direction of "on" when welding.
- 18) Torch switch : Torch switch is torch switch connector.
- 19) Gas outlet : Gas outlet is exit for gas.
- 20) Water cool (water outlet) : Connect with water cool hose of torch.
- 21) Torch terminal(-) : To be connected with torch and to be used as earth in case of stick.
- 22) Earth(+) : To be connected with the base metal and to be used as holder in case of stick.

5. Safety

- 1) Power equipments : Set up a switch for a welding machine.
- 2) Terminal connection : Firmly connect with interface to flow current well when welding. Imperfect connection causes burn out of cable or loss of power.
- 3) Earth : To be based on three kinds of earth.
- 4) Surroundings : Set up at the place well ventilated and avoid setting up at the place plenty of humidity and dust and where ambient temperature is high. Ventilation is specially close relation with the service factor

6. Maintenance and inspection

Be sure to start operation after switching off the input power when checking internal terminal and external terminal. Open case and check 5minutes later after finishing welding work as some voltages might be still charged at the condenser inside circuit of welding machine.

6-1. Check points by time

Before working	<ul style="list-style-type: none"> 1)Check if switch properly work. 2)Check if cool fan smoothly revolves by on/off of switch and ventilation is well made to the front. 3)Check if there is any vibration, noise and smell. 4)Check something wrong with interface of welding cable. 5)Check if there is factor to make insulation defect.
3-6 Months	<ul style="list-style-type: none"> 1)Removing dust : Remove dust by blowing with the dry compressed air clean up transformer, reactor and semiconductor carefully. 2)Checking electricity interface : Firmly tighten bolt and clean and sandpaper dust and impurities well enough to have good connection between metals. 3)Confirm if earth is well done.
Yearly overall maintenance	<ul style="list-style-type: none"> 1)Change consumption goods and defective parts and repair case and reinforce the aged parts of wiring. 2)Insulation resistance should be kept over one mega ohm and maintenance and repair are required in case insulation resistance is less than one mega ohm.

7. Failure diagnosis

S/N	Failures	Cause	Countermeasures
1	Even if the power is ON, the power lamp is not on.	Defective lamps	Change of lamp
		Primary input side has a bad connection	Inspection connection
		Defective fuse	Change of Fuse
		Defective NFB	Change of NFB
2	Only fan activates	Defective torch switch	Change of torch switch
	Fan activates, Error lamp keep lightening	Internal high temperatures	Use after the elapse of time
		Over current detection	Request A/S
3	Gas doesn't come out.	Abnormal input voltage	Check voltage
		No gas or not connected	Confirm, Change
		Solenoid valve defect	Change of valve
		Something wrong with control PCB	Request A/S
4	Gas keeps coming out.	Defective torch switch	Exchange torch switch
		Keeps coming out even though the power is off	Removing foreign substances in valve
		Solenoid valve defect	Change
5	No high frequency when torch switch is On	Abnormal control PCB	Request A/S
		Troubles with gap interval during relay	Check electric discharge gap
		Troubles with HF PCB during relay	Change of PCB
	ARC START doesn't work.	Defective PCB Relay	Change of Relay
		Defective tungsten bar	Process tungsten bar
6	No current adjustment	Low welding current	Increase currents
		Bad remote connection	Confirm, Change
		Bad volume adjustment	Change
7	When no load, voltage meta does not work and arc does not generate.	Defective PCB	Request A/S
		Defective torch switch	Change of torch switch
	When no load, voltage meta does work and arc does not generate.	Disconnection of torch cable	Change of torch switch
		Bad connection with earth cable	Confirm
8	No adjustment of crater	Adjustment volume defect	Change
		Defective PCB	Request A/S
9	Arc doesn't work in case of stick	Defective control circuit	Request A/S
		Defective welding selection Rotary switch	Check rotary switch
10	Power switch tripped.	Diode failure	Check diode, change
		IGBT failure	Check IGBT, change
11	PuIse welding is not made	Defective pulse transfer switch	Check switch, change
		Defective main PCB	Request A/S

8. Welding conditions(Reference)

8-1. Selection of welding process

◎ : Optimal □ : Fitting

Welding process		DC stick	DC TIG
Kinds of the base material			
Mild steel	less than 2.3mm	☉	□
	more than 2.3mm	□	□
Stainless steel	less than 2.3mm	□	☉
	more than 2.3mm	☉	☉
Chromium-molybdenum steel			□
Titanium			☉
Copper		□	☉
Brass		□	□

8-2. TIG Automatic welding condition(No welding rod)

Material	Thickness (mm)	Diameter of electrode (mm)	Currents (A)	Speed (cm/Min)	Ar Gas (ℓ /Min)
Stainless (DCSP)	0.8	1.6	90 ~ 140	100	7
	1.2	1.6, 2.4	120~180	75	8
	1.6	2.4	140~200	62	8
	2.4	2.4	160~250	38	9
Aluminum (ACHF)	0.8	1.6	130	150	10
	1.6	3.2	250	113	10
	3.2	4.0	400	75	12

8-3. TIG Arc spot Welding condition

Material	Thickness (mm)	Current (A)	Arc time (sec)	Ar Gas U7min)	Diameter of electrode (mm)	Arc length (mm)
Stainless (DCSP)	0.8	90	11/4	4	1.6	1.5 ~ 2.0
		115	3/4	4	1.6, 2.4	1.5 ~ 2.5
	1.6	105	5	4	1.6, 2.4	32 ~ 2.5
		250	11/4	6	3.2	2.5 ~ 3.0
Aluminium (ACHF)	0.8	115	2	4	2.4	1.5 ~ 2.5
		160	1	4	2.4, 3.2	2.5 ~ 3.0
	1.6	145	5	4	2.4, 3.2	2.5 ~ 3.0
		160	4	4	2.4, 3.2	2.5 ~ 3.0

8-4. Max. allowable current of the diameter of electrode

Tungsten diameter of electrode (mm)	Allowable current (A)			
	High frequency AC current		Rod(-)	Rod(+)
	Unalloyed Tungsten	Tungsten +Thorium	Unalloyed Tungsten	Tungsten +Thorium
0.5	10	10	20	-
1.0	40	40	80	-
1.6	100	100	150	10 ~ 20
2.4	130	135	250	15 ~ 30
3.2	165	175	400	25 ~ 40
4.0	240	300	500	40-55
4.8	330	400	800	55 ~ 80
6.4	430	500	1100	80 ~ 125

8-5. TIG ARC Welding condition

1) Aluminum plate

Thickness of base metal (mm)	Welding shape	Welding currents (A)			Welding speed (cm/Min)	Diameter of filler wire (mm)	Diameter of electrode (mm)	Ar Gas
		Downward	Forward	Upward				U7Min)
0.8	Butt	20 ~ 40	10 ~ 30	10 ~ 30	20 ~ 40	0~1.2	1.0	5
	Overlap	20 ~ 55	10 ~ 30	10 ~ 30	15 ~ 40	0~1.2	1.0	5
	Gomer	20 ~ 40	10 ~ 30	10 ~ 30	20 ~ 40	0~1.2	1.0	5
	T	20 ~ 40	10 ~ 30	10 ~ 30	5~ 15	1.0~1.2	1.0	5
1.2	Butt	30 ~ 60	20 ~ 50	20 ~ 50	15 ~40	1.2~1.6	1.0 ~ 1.6	6
	Overlap	30 ~ 65	20 ~ 50	20 ~ 50	15 ~ 40	1.2~1.6	1.0 ~ 1.6	6
	Gorner	30 ~ 60	20 ~ 50	20 ~ 50	15 ~ 40	1.2~1.6	1.0 ~ 1.6	6
	T	30 ~ 70	25 ~ 50	25 ~ 50	15 ~ 30	1.2~1.6	1.0 ~ 1.6	6
1.6	Butt	60 ~ 80	40 ~ 80	40 ~ 80	15 ~ 30	1.6~2.0	1.6 ~ 2.4	7
	Overlap	60 ~ 80	40 ~ 80	40 ~ 80	15 ~ 25	1.6~2.0	1.6 ~ 2.4	7
	Corner	60 ~ 80	50 ~ 80	40 ~ 80	30	1.6~2.0	1.6 ~ 2.4	7
	T	70 ~ 80	60 ~ 80	60 ~ 80	15 ~25	1.6~2.0	1.6 ~ 2.4	7
3.0	Butt	125 ~ 145	115~135	120~140	30	2.5~3.0	2.4	8
	Overlap	140~160	125~145	130~160	25	0 ~ 2.5	2.4	8
	Corner	125~145	115~135	130~150	30	0~2.5	2.4	8
	T	140~160	115~135	140~160	25	1.5~2.5	2.4	8
4.5	Butt	190~220	190~220	180~210	28	3.0	3.2	10
	Overlap	210~240	190~220	180~210	23	3.0	3.2	10
	Corner	190~220	180~210	180~210	28	3.0	3.2	10
	T	210~240	190~220	180~210	23	3.0	3.2	10
6.0	Butt	260 ~300	220~260	210~250	25	3.0~4.5	4.0	12
	Overlap	290~340	220~260	210~250	20	3.0~4.5	4.0	12
	Corner	280~320	220~260	210~250	25	3.0~4.5	4.0	12
	T	280~320	220~260	210~250	20	3.0~4.5	4.0	12
9.5	Butt	330~380	250 ~ 300	250~300	13	4.5~6.0	4.0 ~ 6.0	14
	Overlap	350~400	250 ~ 300	250~300	13	4.5~6.0	4.0 ~ 6.0	14
	Corner	350~400	250 ~ 300	250~300	13	4.5~6.0	4.0 ~ 6.0	14
	T	330~380	250 ~ 300	250~300	13	4.5~6.0	4.0 ~ 6.0	14
12.0	Butt	400~450	290 ~ 300	250~300	8	4.5~6.0	4.0 ~ 6.0	15
	Overlap	400~450	300 ~ 350	275~325	8	4.5~6.0	4.0 ~ 6.0	15
	Corner	400~450	300 ~ 350	275~325	8	4.5~6.0	4.0 ~ 6.0	15
	T	420~470	300 ~ 350	275~325	8	4.5~6.0	4.0 ~ 6.0	15

2) Stainless steel plate

Thickness of base metal(mm)	Welding shape	Welding currents (A)			Welding speed (cm/Min)	Diameter of Filler wire(mm)	Diameter of electrode (mm)	Ar Gas U/Min)
		Downward	Forward	Upward				
0.5	Butt	10 ~ 15	10~ 15	10~ 15	40	-	1.0	4
	Overlap	10 ~ 15	10~ 15	10~ 15	20	1.0	1.0	4
	Corner	10 ~ 20	10~20	10 ~ 20	40	-	1.0	4
	T	15 ~ 20	15 ~ 20	15 ~ 20	35	1.0	1.0	4
1.0	Butt	30 ~ 40	30 ~ 40	30 ~ 40	15 ~ 40	1.0~1.6	1.0 ~ 1.6	5
	Overlap	40 ~ 50	40 ~ 50	40 ~ 50	15 ~ 30	1.0~1.6	1.0 ~ 1.6	5
	Corner	45 ~ 55	45 ~ 55	45 ~ 55	20 ~ 40	1.0~1.6	1.0 ~ 1.6	5
	T	50 ~ 60	50 ~ 60	50~ 60	10 ~ 35	1.0~1.6	1.0 ~ 1.6	5
1.5	Butt	60 ~ 100	60 ~ 80	60~70	15 ~ 30	1.6	1.6	5
	Overlap	60 ~ 100	80~100	80 ~ 90	15 ~ 30	1.6	1.6	5
	Corner	60 ~ 80	60 ~ 70	60~ 70	20 ~ 40	1.6	1.6	5
	T	70 ~ 90	70 ~ 90	70 ~ 90	10 ~ 20	1.6	1.6	5
2.5	Butt	100~120	90~ 110	90~110	20 ~ 30	1.5~2.5	1.6 ~ 2.4	5
	Overlap	110~130	100~120	100~120	20 ~ 30	1.5~2.5	1.6 ~ 2.4	5
	Corner	100~120	90~110	90 ~ 110	25 ~ 30	1.5~2.5	1.6 ~ 2.4	5
	T	110~130	100~120	100~120	15 ~ 25	1.5~2.5	1.6 ~ 2.4	5
3.0	Butt	120~140	110~130	105~ 125	30	2.5	1.6 ~ 2.4	5
	Overlap	130~150	120~140	120~140	25	2.5	1.6 ~ 2.4	5
	Corner	120~140	110~130	115~ 135	30	2.5	1.6 ~ 2.4	5
	T	130~150	115~135	120~140	25	2.5	1.6 ~ 2.4	5
4.5	Butt	200~250	150~200	150~200	25	3.0	2.4	6
	Overlap	225~275	175~225	175~225	20	3.0	1.6 ~ 2.4	6
	Corner	200~250	150~200	150~200	25	3.0	2.4	6
	T	225~275	175~225	175~225	20	3.0	2.4	6
6.0	Butt	275~350	200~250	200~250	25	4.5	3.2	6
	Overlap	300~375	225~275	225~275	20	4.5	3.2	6
	Corner	275~350	200~250	200~250	25	4.5	3.2	6
	T	300~375	225~275	225~275	20	4.5	3.2	6
12.0	Butt	350~450	225~275	225~275	15	6.0	3.2 ~ 4.0	7
	Overlap	375~475	230~280	230~280	15	6.0	3.2 ~ 4.0	7
	Corner	375~475	230~280	230~280	15	6.0	3.2 ~ 4.0	7

3)Copper plate(Direct current straight polarity)

Thickness of base metal(mm)	Welding shape	Welding currents (A) Downward	Welding speed (cm/Min)	Diameter of filler wire (mm)	Diameter of electrode (mm)	Ar Gas level (ℓ/Min)
0.5	Butt	15 ~ 25	40	0 ~ 1.0	0.5 ~ 1.0	5
	Overlap	20 ~ 30	30	0 ~ 1.0	0.5 ~ 1.0	5
	Corner	20 ~ 30	35	0 ~ 1.0	0.5 ~ 1.0	5
	T	20 ~ 30	30	0 ~ 1.0	0.5 ~ 1.0	5
1.0	Butt	50 ~ 60	40	1.0 ~ 1.6	1.0 ~ 1.6	6
	Overlap	55 ~ 65	30	1.0 ~ 1.6	1.0 ~ 1.6	6
	Corner	50 ~ 60	35	1.0 ~ 1.6	1.0 ~ 1.6	6
	T	55 ~ 65	30	1.0 ~ 1.6	1.0 ~ 1.6	6
1.5	Butt	110~140	30	1.5	1.6 ~ 2.4	7
	Overlap	130~150	25	1.5	1.6 ~ 2.4	7
	Corner	110~140	30	1.5	1.6 ~ 2.4	7
	T	130~150	25	1.5	1.6 ~ 2.4	7
3.0	Butt	175~225	28	2.5 ~ 3.0	2.4 ~ 3.2	7
	Overlap	200~250	23	2.5 ~ 3.0	2.4 ~ 3.2	7
	Corner	175~225	28	2.5 ~ 3.0	2.4 ~ 3.2	7
	T	200~250	23	2.5 ~ 3.0	2.4 ~ 3.2	7
4.5	Butt	250~300	25	3.0	3.2 ~ 4.0	6
	Overlap	275~325	20	3.0	3.2 ~ 4.0	6
	Corner	250~300	25	3.0	3.2 ~ 4.0	6
	T	275~325	20	3.0	3.2 ~ 4.0	6
6.0	Butt	300~350	23	3.0	4.0 ~ 6.0	7
	Overlap	325~375	18	3.0	4.0 ~ 6.0	7
	Corner	300~350	23	3.0	4.0 ~ 6.0	7
	T	325~375	18	3.0	4.0 ~ 6.0	7
9.5	Butt	375~425		4.5	4.0 ~ 6.0	8
	Overlap	400~450		4.5	4.0 ~ 6.0	8
	Corner	375~425		4.5	4.0 ~ 6.0	8
	T	400~450		4.5	4.0 ~ 6.0	8
12.0	Butt	500~700		6.0	4.0~ 6.0	8

4) Brass plate (Direct current straight polarity or Alternating current high frequency)

Thickness of base metal (mm)	Welding shape	Welding currents (A)			Welding speed (cm/Min)	Diameter of filler wire (mm)	Diameter of electrode (mm)	Ar Gas level (ℓ/Min)
		Downward	Forward	upward				
1.0	But t	30 ~ 40	30 ~ 40	30 ~ 40	40	1.0	1.0	5
	Over lap	30 ~ 40	30 ~ 40	30 ~ 40	40	1.0	1.0	
	Corner	40 ~ 50	40 ~ 50	40 ~ 50	30	1.0	1.0	
	T	40 ~ 50	40 ~ 50	40 ~ 50	30	1.0	1.0	
1.5	But t	50~70	40 ~ 60	40 ~ 60	30	1.5	1.6	6
	Over lap	50~70	40 ~ 60	40 ~ 60	25	1.5	1.6	
	Corner	60~75	50 ~ 65	50 ~ 65	30	1.5	1.6	
	T	50~70	40 ~ 60	40 ~ 60	25	1.5	1.6	
3.0	But t	130~150	120~140	120~140	30	2.5	1.6	7
	Over lap	140~160	130~150	130~150	25	2.5	1.6 ~ 2.4	
	Corner	130~150	120~140	120~140	30	2.5	1.6	
	T	140~160	130~150	130~150	25	2.5	1.6 ~ 2.4	
4.5	But t	150~200				3.0	2.4	8
	Over lap	175~225				3.0	2.4	
	Corner	150~200				3.0	2.4	
	T	175~225				3.0	2.4	
6.0	But t	150~200				3.0~4.5	2.4	9
	Over lap	150~200				3.0~4.5	2.4	
	Corner	170~220				3.0~4.5	2.4	
	T	170~220				3.0~4.5	2.4	
9.5	But t	235~385				3.0~4.5	3.2	9
	Over lap	250~300				3.0~4.5	3.2	
	T	230~280				3.0~4.5	3.2	
12.0	But t	250~300				3.0~4.5	3.2	9
	Over lap	275~325				3.0~4.5	3.2	
	T	275~325				3.0~4.5	3.2	

5) Tantalum plate(Direct current straight polarity)

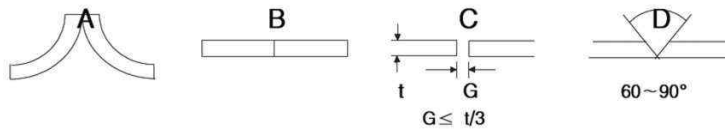
Thickness of base metal (mm)	Welding currents (A)		Welding speed (cm/Min)	Diameter of electrode (mm)	Ar Gas level (ℓ/Min)
	Downward				
1.0	35		30	1.0	7
1.2	60		25	1.6	8
1.4	70		30	1.6	8
1.6	80		25	1.6	9
1.8	100		30	1.6	10
2.0	125		25	1.6 ~ 2.4	11
2.6	140		30	1.6 ~ 2.4	11
3.0	160		25	2.4 ~ 3.2	12
3.2	195		25	2.4 ~ 3.2	12

8-6. Diameter of electrode, gas flux, nozzle number at the various welding current

Diameter of electrode (mm)	Welding currents		Ar Gas level (ℓ/Min)	N-151A N-101AP N-2011A (N-301W)	N-351W	N-501W	
	Rod(-)	Rod(+)		Ceramic nozzle number		Ceramic nozzle	Metal nozzle
0.5	4 ~ 15	-	3~ 7	4A, 6A, 8A	-	-	-
1.0	10~65	-	4~ 8	4A, 6A, 8A	-	9	10
1.6	55~120	8~15	6~9	8A, 10A	-	9	10
2.0	85~150	8~20	6~ 10	8A 10A, 12A	-	-	-
2.4	120~200	10~25	7 ~ 10	8A, 10A, 12A	8B, 10B, 12A	10, 11	10, 13
3.2	200~320	20~30	10~ 15	8A, 10A, 12A	8 ~ 14B	10, 11, 12	13
4.0	320~400	30~45	12 ~ 20	-	10 ~ 14B	-	13
4.8	400~640	45~65	15 ~ 25	-	10 ~ 14B	-	13,16,19
6.7	640~880	65~100	20~30	-	-	-	16, 19

8-7. Stainless steel(SUS 304) welding condition(Direct current straight polarity)

Thickness of base metal (mm)	Diameter of electrode (mm)	Diameter of welding rod (mm)	Welding currents (A)	Ar Gas (ℓ/Min)	Number of layer	Improve shape
0.6	1.0 ~ 1.6	0 ~ 1.0	15 ~ 30	4 ~5	1	A, B
1.0	1.0 ~ 1.6	0 ~ 1.0	25 ~ 50	4 ~7	1	A, B
1.5	1.0 ~ 1.6	0 ~ 1.6	50~70	6 ~9	1	B
2.5	1.6 ~ 2.4	1.6 ~ 2.4	65~95	6~9	1	B
3.0	1.6 ~ 2.4	2.4 ~ 3.2	90~120	7~9	1~2	B, C
4.0	2.4	1.6 ~ 2.4	110~150	7~ 10	2 ~3	C, D
5.0	2.4~3.2	1.6 ~ 2.4	120~180	10 ~ 15	2 ~3	C' D
6.0	2.4 ~ 3.2	2.4 ~ 3.2	150~200	10 ~ 15	3 ~4	C, D
8.0	3.2 ~ 4.0	3.2 ~ 4.0	160~220	12 ~ 18	4~6	D
12.0	3.2 ~ 4.0	3.2 ~ 4.0	180~240	12 ~ 18	6 ~8	D

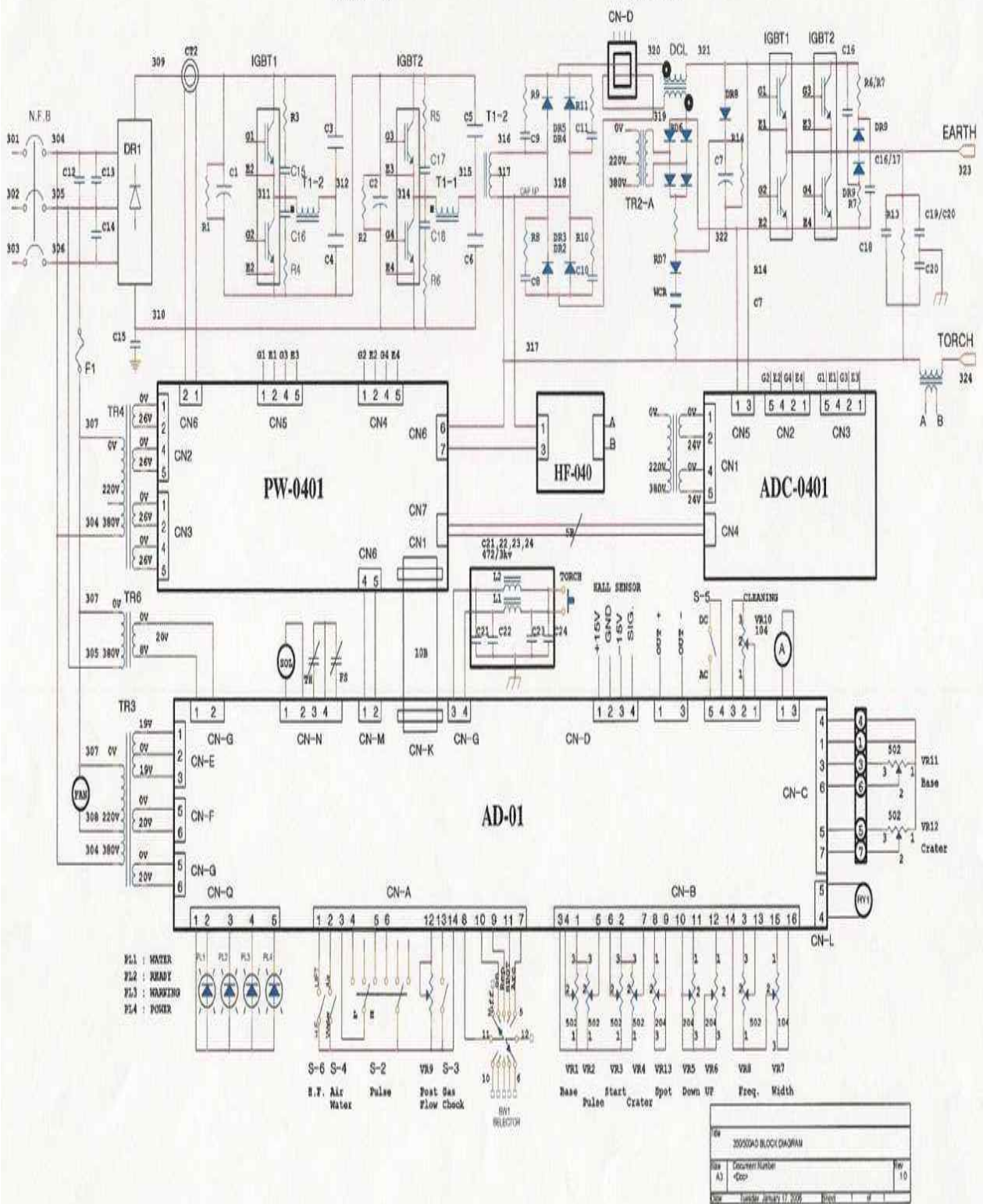


8-8. Pulse welding condition

Material of base metal	Shape	Welding currents (A)	Pulse selection	Welding speed (mm/Min)
Stainless steel (SUS304)	0.3	20	HIGH	700
		25	HIGH	800
	0.5	40	HIGH	700
	2.0	105	HIGH	300
Mild steel SPCC	1.2	80	LOW	300

350/500AD BLOCK DIAGRAM

HF-040





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