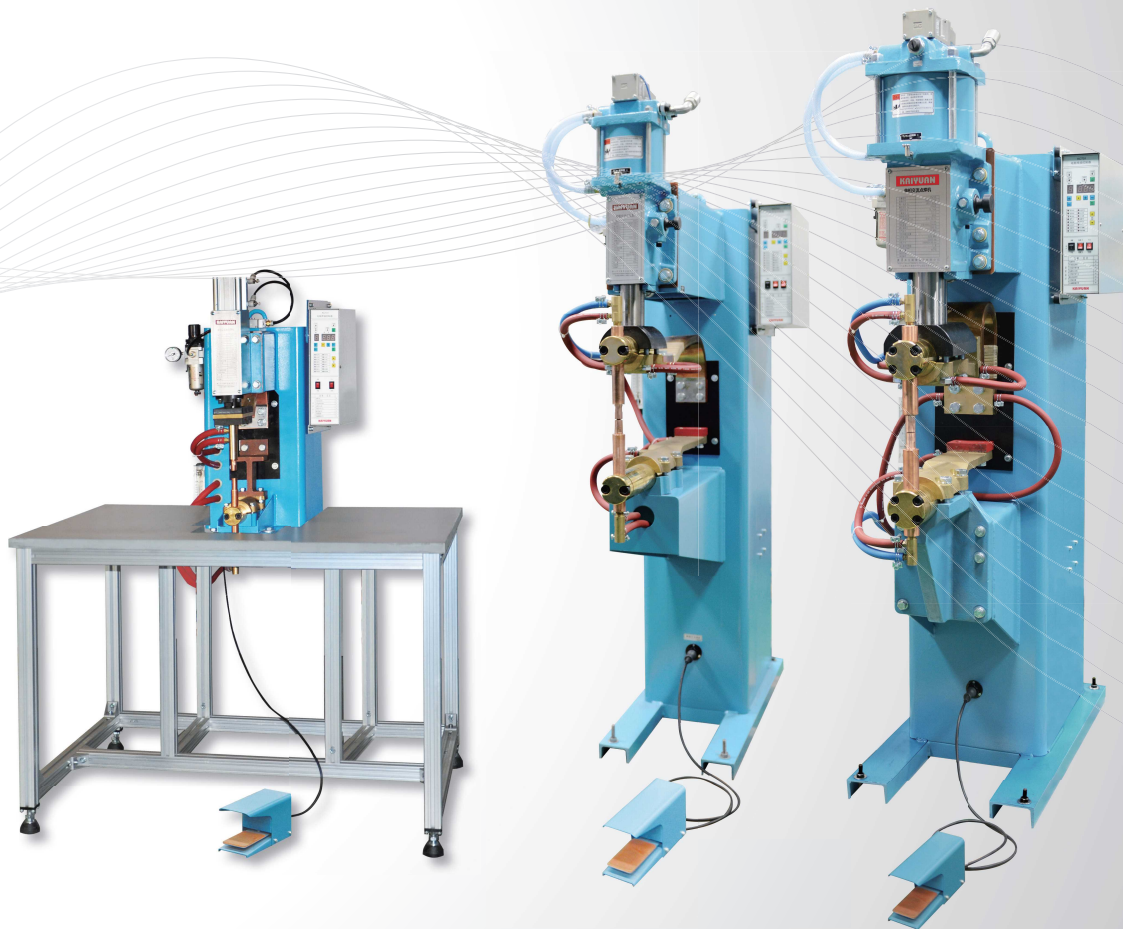


**KAIYUAN**

## Single phase AC spot/projection welder



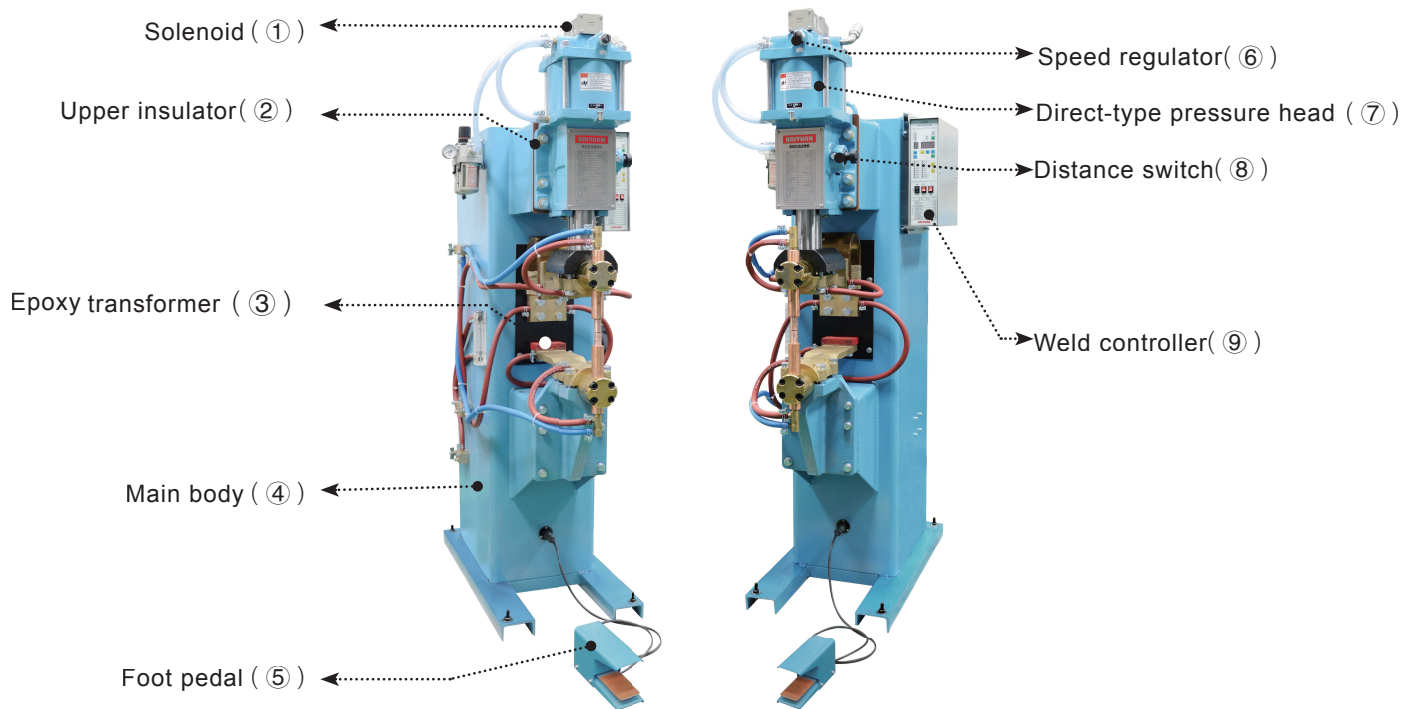
**KAIYUAN WELDING & CUTTING AUTOMATION INDIA PVT., LTD.**

# Single phase AC spot/projection welder

## Stand type spot/projection welder

For spot or projection welding on carbon steel, stainless steel, etc.

### Structure and traits



- 1 Two-position five-way solenoid to control pressure head up and down.
- 2 Upside insulation is convenient for other device installation. Lowerside accident like short circuit when installing welding jigs can be prevented.
- 3 Adopt epoxy transformer for best weld quality.
- 4 All the basic structures are welded by automatic robot. Good anti-vibration and impact rigidity will assure good weld.  
The main body features with anti-shaking and impact resistance to avoid pressure sliding during welding.
- 5 Foot pedal switch control for machine start welding.

- 6 Pressure head up and down speed can be adjusted continuously. It reduced the pressure impact to the work piece and reduced noise also.
- 7 Direct type pressure head for fast spots, less gas consuming, better follow-up ability, less noise and longer life.
- 8 Double up and down distance with fast and easy switch.
- 9 Intelligent controller has compensation on constant current and constant voltage function when outer fluctuation to assure stable current output. Multiple programs can be stored and adjusted. Error alarm is available.
- 10 Best quality copper material with best weld loop design can achieve best output ability.
- 11 Simple operation and easy maintenance and repair.

## Table type spot welder

Precision welding for low voltage appliance and precision devices.

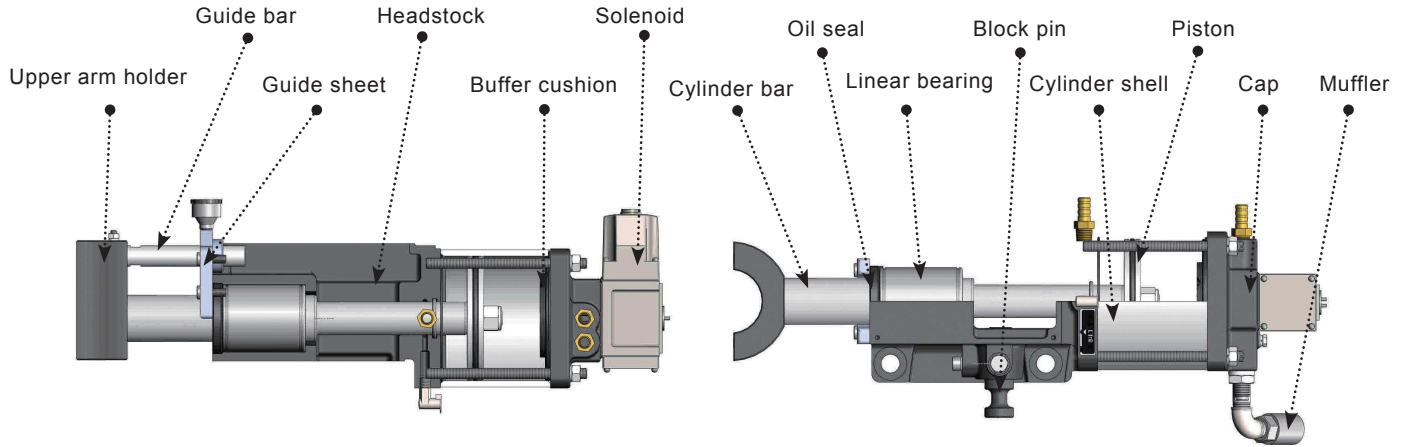
### Features

- Vertical pressure with linear guide. Buffer integrated inside the weld head reduces the instant shock.
- Precision weld controller can offer fine current accuracy control.
- Different JIGs can be available for different kinds of parts.



# Single phase AC spot/projection welder

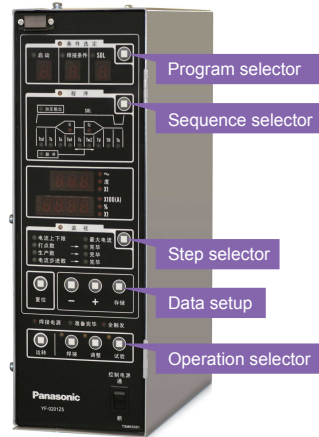
## Pressure structure



## Controller

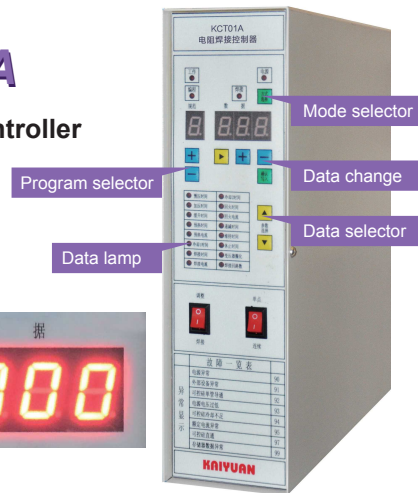
### YF-0201Z5

Panasonic controller



### KCT01A

KAIYUAN controller



## Main datasheet

Model	Category	Resistance weld controller	
		YF-0201Z5	KCT01A
Control factor-times		4/15 spec, 2 times pulse weld control	4/15 spec, 3 times pulse weld control
Solenoid drives		2	2
Compensation mode		KSR(1st or 2nd), voltage compensation	KSR(1st side), voltage compensation
Rated controller input		AC100±10%, 1ph	AC415 (+ 10% ~ -20%), 1ph
Rated power source input		AC415±15%, 1ph	AC415 (+ 10% ~ -20%), 1ph
Rated frequency		50/60Hz	50/60Hz
Voltage display		No	Yes, panel display
Start mode		Pulze start, normal start	Pulze start, normal start
Current feedback mode		2nd side inspect feedback(default)	1st side inspect feedback(default)
Operation mode		Adj./Weld/Test	Adj./Weld/Test
Weld counter		Yes (Display, clear, alarm function)	Yes (Display, clear function)
Production counter		Yes	No
Weld repair		Yes	Yes
Interlock		In-built	In-built
Weld stop, end signal		In-built	In-built
Error reset		Panel or terminal	Panel

# Single phase AC spot/projection welder

## Main datasheet

Model		Item(unit)	Rated power	Rated 1st volt.	Rated freq.	Max. short Amp	Max. weld input	Duty cycle	Throat size	Max. pressure	Electrode stroke	Water flow	Net weight	Electrode dimension							
			KVA	V	HZ	A	KVA	%	mm	Kgf	mm	L/min	Kg	Tip	Electrode	Arm	Disc				
Single phase AC table type welder	DN-15SF DN-15PF		15	415	50	12000	35	9.1	155X200	85	20	2	210	Refer to page 5 and 6 about electrode dimension. Out of that list should be special designed.							
	DN-15SE DN-15PE		15	415	50	12000	35	9.1	155X200	150	20	2	210								
	DN-15SG DN-15PG		15	415	50	12000	35	9.1	185X200	250	20	2	210								
	DN-35SF DN-35PF		35	415	50	14000	59	11.5	155X200	85	20	2	210								
	DN-35SE DN-35PE		35	415	50	14000	59	11.5	155X200	150	20	2	210								
	DN-35SG DN-35PG		35	415	50	14000	59	11.5	185X200	250	20	2	210								
Single phase AC spot welder	DN-35SA DN-35PA		35	415	50	13000	59	17.6	200X600	500	20/60	2	255					Refer to page 5 and 6 about electrode dimension. Out of that list should be special designed.			
	DN-50SA DN-50PA		50	415	50	19500	117	9.1	200X600	1000	20/80	3	500								
	DN-70SA DN-70PA		70	415	50	19500	120	17	200X600	1000	20/80	3	510								
	DN-100SA DN-100PA		100	415	50	33000	316	5	200X425	1000	20/80	8	555								
Single phase AC spot/projection welder	DTN-35SA DTN-35PA	Spot	35	415	50	16000	73	11.5	170X400	500	20/60	2	255	Refer to page 5 and 6 about electrode dimension. Out of that list should be special designed.							
		Proj.				19500	89	7.7	170X300												
	DTN-50SA DTN-50PA	Spot	50	415	50	22500	138	6.6	165X425	1000	20/80	3	500								
		Proj.				29000	178	3.9	165X300												
	DTN-70SA DTN-70PA	Spot	70	415	50	22500	138	12.9	165X425	1000	20/80	3	510								
		Proj.				29000	178	7.7	165X300												
	DTN-100SA DTN-100PA	Spot	100	415	50	33000	316	5	165X425	1000	20/80	8	555								
		Proj.				40000	384	3.4	165X300												
	DTN-160SA DTN-160PA	Spot	160	415	50	36000	362	7.9	200X425	1000	20/80	12	600								
		Proj.				43000	432	5.5	200X300												
	DTN-200SA DTN-200PA	Spot	200	415	50	42000	465	7.5	200X425	1800	20/80	12	650								
		Proj.				50000	553	5.3	200X300												

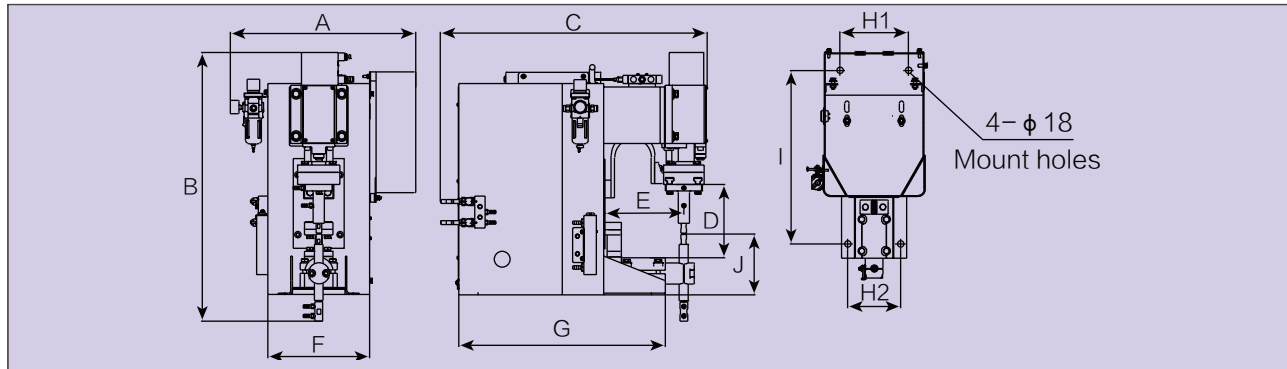
## Requirements at user side

Model	Item(Unit)	Input power (weld) device					Cooling water					Compressed air				
		Voltage	Power	Breaker	Fuse	Input cable	Ground cable	Water pressure	Water flow	Water temp.	Water residence	Inlet hose ID	Outlet hose ID	Compressor	Air pressure	Gas inlet ID
		V	KVA	—	A	mm <sup>2</sup>	mm <sup>2</sup>	kg/cm <sup>2</sup>	l/min	°C	kf.cm	mm	mm	HP	kg/cm <sup>2</sup>	mm
DN-15 (Series table type)	415±10%	Take the rated power as standard (refer to the rated spec)*	2P.450V 100A above	100	16above	16above	2~3	2	10~30	5above	φ10, φ12	φ10, φ12	3above	5~7	φ8 or φ10 (fast insert)	
DN-35 (Series table type)	415±10%		2P.450V 100A above	100	16above	16above	2~3	2	10~30	5above	φ10, φ12	φ10, φ12	3above	5~7	φ8 or φ10 (fast insert)	
DN-35SA DN-35PA	415±10%		2P.450V 100A above	100	16above	16above	2~3	2	10~30	5above	φ10, φ12	φ10, φ12	3above	5~7	φ12	
DTN-35SA DTN-35PA	415±10%		2P.450V 100A above	100	16above	16above	2~3	2	10~30	5above	φ10, φ12	φ10, φ12	3above	5~7	φ12	
DN-50SA DN-50PA	415±10%		2P.450V 125A above	125	35above	16above	2~3	3	10~30	5above	φ10, φ15	φ10, φ15	3above	5~7	φ12	
DTN-50SA DTN-50PA	415±10%		2P.450V 125A above	125	35above	16above	2~3	3	10~30	5above	φ10, φ15	φ10, φ15	3above	5~7	φ12	
DN-70SA DN-70PA	415±10%		2P.450V 160A above	160	50above	25above	2~3	3	10~30	5above	φ10, φ15	φ10, φ15	3above	5~7	φ12	
DTN-70SA DTN-70PA	415±10%		2P.450V 160A above	160	50above	25above	2~3	3	10~30	5above	φ10, φ15	φ10, φ15	3above	5~7	φ12	
DN-100SA DN-100PA	415±10%		2P.450V 250A above	250	70above	35above	2~3	8	10~30	5above	φ10, φ15	φ10, φ15	5above	5~7	φ12	
DTN-100SA DTN-100PA	415±10%		2P.450V 250A above	250	95above	50above	2~3	8	10~30	5above	φ10, φ15	φ10, φ15	5above	5~7	φ12	
DTN-160SA DTN-160PA	415±10%		2P.450V 350A above	350	95above	50above	2~3	12	10~30	5above	φ10, φ15	φ10, φ15	5above	5~7	φ12	
DTN-200SA DTN-200PA	415±10%		2P.450V 400A above	400	120above	70above	2~3	12	10~30	5above	φ10, φ15	φ10, φ15	5above	5~7	φ20	

\*When installed with extended cables, max. input will be reduced. Then larger power should be provided than the rated spec.

# Single phase AC spot/projection welder

## Overall dimensions (Unit: mm)



Model	A	B	C	D	E	F	G	H1	H2	I	J
DN-15SF/DN-15PF	530	760	725	200	200	290	590	190	150	493	173
DN-15SE/DN-15PE	530	760	725	200	200	290	590	190	150	493	173
DN-15SG/DN-15PG	530	760	830	190	225	290	590	195	195	493	195
DN-35SF/DN-35PF	530	760	725	200	200	290	590	190	150	493	173
DN-35SE/DN-35PE	530	760	725	200	200	290	590	190	150	493	173
DN-35SG/DN-35PG	530	760	830	190	225	290	590	195	195	493	195

- Table type machine can be used separately or together with table. Table size is 1100\*900mm, weld position is 925mm high. The table is steel structured with high density wooden board (table board). The board has cover or uncover types, the cover will be stainless steel.

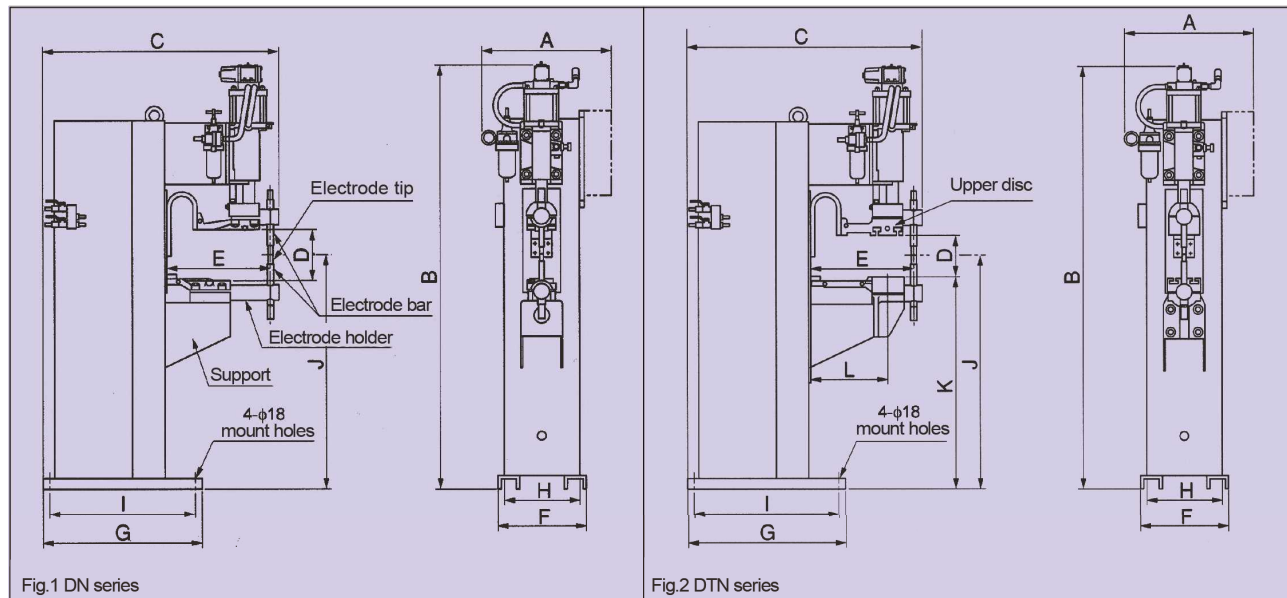


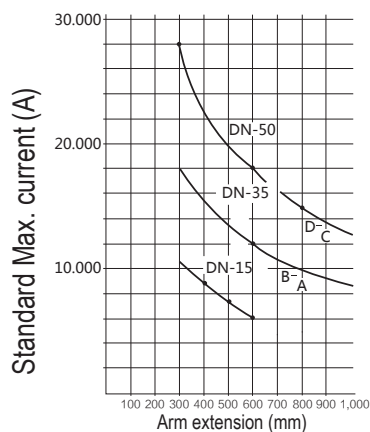
Fig.1 DN series

Fig.2 DTN series

Model	A	B	C	D	E	F	G	H	I	J	K	L
DN-35SA/DN-35PA	455	1630	1100	200	600	340	750	285	700	900	-	-
DTN-35SA/DTN-35PA	455	1630	900	170	400	340	600	285	550	900	810	300
DN-50SA/DN-50PA	595	1765	1140	200	600	440	800	390	750	900	-	-
DTN-50SA/DTN-50PA	595	1765	965	165	425	440	800	390	750	900	810	300
DN-70SA/DN-70PA	595	1765	1140	200	600	440	800	390	750	900	-	-
DTN-70SA/DTN-70PA	595	1765	965	165	425	440	800	390	750	900	810	300
DN-100SA/DN-100PA	595	1765	995	200	425	440	800	390	750	900	-	-
DTN-100SA/DTN-100PA	595	1765	995	165	425	440	800	390	750	900	810	300
DTN-160SA/DTN-160PA	610	1780	1060	200	425	460	850	410	800	900	795	300
DTN-200SA/DTN-200PA	610	1905	1060	200	425	460	850	410	800	900	795	300

# Single phase AC spot/projection welder

## Relation between Max. weld current and arm extension



### <Illustration>

Sample 1  
When arm extension of DN-35 is 800mm, the standard max. output current is 9900A. (refer to point A B)

Sample 2  
If extended arm requests 900mm and standard max. current is 13000A, the suitable machine should be DN-50

Please do not increase the arm length to extend. (Large flex will break the head).

## Welder duty cycle calculation

### Calculation of duty cycle (actual power duty cycle)

$$\frac{\text{Spots within 1min.} \times \text{cycles per}}{60\text{sec} \times \text{Frequency (Hz)}} \times 100 (\%) \text{ ----- (Formula 1)}$$

### Calculation of actual allowed duty cycle ( % under actual measured current ? % )

$$\left[ \frac{\text{Continuous Amp. (on nameplate)}}{\text{Weld Amp. (measured value)}} \right]^2 \times 100 (\%) \text{ ----- (Formula 2)}$$

The above calculated value in formula 1 should equal or less than value in formula 2.

In general, weld current will be less than short current by 10-30% as spot and 15-40% by projection weld. So please select 20-40% larger on max.weld current and short current.

## Electrode tips categories

### Electrode tips

	Dimensional drawing	Part No.	Dimension						Pressure (kg)
			φA	F	I	Taper	R		
R type		---	φA	F	I	Taper	R		
		LBA00066	16	20	50	1/5	25		
		LBA00201	16	20	50	1/10	25		
		LBA00102	20	25	60	1/5	50		
F type		LBA00171	16	20	50	1/5	-		
		LBA00172	16	20	50	1/10	-		
		LBA00173	20	25	60	1/5	-		
		LBA00174	20	25	60	1/10	-		
K type		LBA00165	16	20	50	1/5	25		
		LBA00166	16	20	50	1/10	25		
		LBA00167	20	25	60	1/5	50		
		LBA00168	20	20	60	1/10	50		
E type		Part No.	φA	F	I	Taper	φK		
		LBA00161	16	20	50	1/5	6		
		LBA00162	16	20	50	1/10	6		
		LBA00163	20	25	60	1/5	8		
LBA00164	20	25	60	1/10	8				

	Dimensional drawing	Part No.	Dimension						Pressure (kg)
			φA	H	B	C	L	Taper	
Crank type		---	φA	H	B	C	L	Taper	
		LBA00175	16	30	30	40	70	1/10	150
		LBA00176	16	50	40	40	80	1/10	100

	Dimensional drawing	Part No.	Dimension				
			Bolt	φB	φC	φA	Taper
Nut welded type		---	Bolt	φB	φC	φA	Taper
		BIA06794	M4	25	6	16	1/5
		BIA06792	M4	25	6	16	1/10
		BIA06799	M5	25	6	16	1/5
		BIA06800	M5	25	6	16	1/10
		BIA06803	M6	25	6	16	1/5
		BIA06804	M6	25	6	16	1/10
		BIA06801	M6	25	6	20	1/5
		BIA06805	M6	25	6	20	1/10
		BIA06858	M8	30	6	16	1/5
		BIA06857	M8	30	6	16	1/10
		BIA06855	M8	30	6	20	1/5
		BIA06854	M8	30	6	20	1/10
		BIA06772	M10	30	6	16	1/5
		BIA06777	M10	30	6	16	1/10
		BIA06775	M10	30	6	20	1/5
		BIA06776	M10	30	6	20	1/10
BIA06783	M12	32	6	20	1/5		
BIA06781	M12	32	6	20	1/10		
BIA06784	M12	32	6	25	1/5		
BIA06785	M12	32	6	25	1/10		

### Tip accessories

Dimensional drawing	Part No.	Remarks
	LBA00253	Tip φ16 Taper 1/5 Electrode bar φ20 Taper 1/10 Material BsBV
	LBA00254	Tip φ16 Taper 1/5 Electrode bar φ20 Taper 1/10 Material BsBM

# Single phase AC spot/projection welder

## Electrode holder

Dimensional drawing	Part No.		Size	
			L	
	LBA00063	Up	180	
	LBA00064	Dn	335	
	LBA00258		280	
	LBA00259		435	
	LBA00106		220	
	LBA00260		320	

Dimensional drawing	Part No.		Size	
			L	
	LBA00283	Up	180	
	LBA00284	Dn	335	
	LBA00285		280	
	LBA00286		435	
	LBA00287		220	
	LBA00288		320	

## Electrode bar

Dimensional drawing	Part No.	Size		
		L	Taper	
	—	L	Taper	
	BIA00022	160	1/5	
	BIA00028	160	1/10	
	BIA00027	250	1/5	
	BIA00063	180	1/5	
	BIA00026	180	1/10	
	BIA00025	300	1/5	
	BIA00023	300	1/10	
		Part No.	L	Taper
		BIA00159	Φ16	1/5
		BIA00160	Φ16	1/10
			BIA00161	Φ20
BIA00162	Φ20		1/10	

Dimensional drawing	Part No.	Size				Pressure (kg)	
		φA	H	φB	Taper		
	—	φA	H	φB	Taper		
	BIA00141	25	50	16	1/5	150	
	BIA00142	25	50	16	1/10	150	
	BIA00143	25	70	16	1/5	130	
	BIA00144	25	70	16	1/10	130	
	BIA00145	25	100	16	1/5	100	
	BIA00146	25	100	16	1/10	100	
	BIA00147	32	50	20	1/5	150	
	BIA00148	32	50	20	1/10	150	
	BIA00149	32	70	20	1/5	130	
	BIA00150	32	70	20	1/10	130	
	BIA00151	32	100	20	1/5	100	
	BIA00152	32	100	20	1/10	100	
		BIA00140	25	50	16	1/10	150
		BIA00153	25	70	16	1/10	130
BIA00154		25	100	16	1/10	100	
BIA00156		32	50	20	1/10	150	
BIA00157		32	70	20	1/10	130	
BIA00158		32	100	20	1/10	70	

## Conductive disc

Model	Dimension							T slot			
	A	B	C	D	E	F	P	a	b	c	d
DTN-35SA DTN-35PA	120	120	20	20	60	58	80	14	24	10	10
DTN-50/70/100/160SA DTN-50/70/100/160PA	150	150	35	25	79	65	90	14	24	13	10
DTN-200SA DTN-200PA	165	165	40	35	80	70	90	14	24	13	10

# Model selection

**1** In general, weld current will be less than short current by 10-30% as spot and 15-40% by projection weld. So please select 20-40% larger on max.weld current and short current.

**3** For unlisted thickness or dimension, please select the most closer size.

**2** According to duty cycle, arm extension(part size), required strength, appearance and selected model, please refer to the following list.

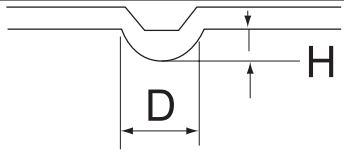
**4** For more detailed list, please require to our sales department.

## Weld data criterion on MS spot welding

Weld norm	Moderate norm (Grade B)									
Thk (mm)	0.6	0.8	1	1.2	1.6	2	2.8	3.2	4	5
Press force (N)	1000	1250	1500	1750	2400	3000	3700	5000	6300	8000
ON time (cycle)	13	15	20	23	30	36	44	60	75	90
Weld current (A)	5500	6500	7200	7700	9100	10300	11300	1290	14300	17000
Tip shape (mm)	4	4.5	5	5.5	6.3	7	7.8	9	11	12.5

## Weld data criterion on MS projection welding

Thk(mm)		0.6	0.8	1.0	1.2	1.6	2.0
Sample A	Press force (N)	700	900	1300	1750	2650	3650
	ON time (cycle)	3	4	5	7	10	14
	Weld current (A)	4500	6200	7700	8800	10600	12200
Sample C	Press force (N)	400	550	700	900	1500	2200
	ON time (cycle)	6	9	14	18	27	36
	Weld current (A)	3000	3500	3900	4400	5500	6500
Spot	H (mm)	0.64	0.76	0.89	1.02	1.14	1.27
	shape	2.29	2.67	3.05	3.56	4.06	4.57





○The data on left is for single spot.

○Sample A is for one spot, and sample C is for three plus spots, pressure and current should spots\*data.

## Weld data criterion on SS spot welding

Thk(mm)	0.4	0.5	0.6	0.8	1.0	1.2	1.6	2.0	2.8	3.2
Press force (N)	1500	1900	2200	3000	4000	5000	7000	9000	11000	15000
ON time (cycle)	4	4	5	6	7	8	11	14	16	20
Weld current (A)	3000	3800	4700	6200	7600	9000	11500	13500	15500	18000
Tip shape (mm)	3.2	3.5	4.0	4.5	5.0	5.5	6.3	7.0	7.8	9.0

## Weld data criterion on nuts projection welding

	4 spots nut 					3 spots nut 				
Weld norm	Moderate norm					Moderate norm				
Nut size	M12	M12	M12	M8	M8	M10	M10	M10	M6	M12
Thickness (mm)	1.2	2.3	4.0	1.2	2.3	1.2	2.3	4.0	1.2	2.3
Press force (N)	3700	4000	4200	2700	2900	3500	3700	4100	2700	2900
ON time (cycle)	5	5	5	5	5	5	5	5	5	5
Weld current (A)	14000	15000	16500	9500	10500	13000	14000	15500	9500	10500

Note) 1. This list is for reference. Please finalise the welding parameter by actual weldment and part strength.

2. The list is for 50Hz power ON condition. When 60Hz, the above data can be timed by 1.2 as reference.

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