



High-Current, Buried-Arc TransferWelding

Buried-Arc

Peripheral equipment

■Chiller

Product name	Item	Specifications
Chiller	Cooling capacity	5 kW or more (At 25 degrees)
	Water flow rate	4 L/min or more

■Cleaning kit (Nozzle cleaning, wire cutter)

Product name	Part No.(Model)
Cleaning kit	CLK-01



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In accordance with DAIHEN's policy to make continuing improvements, design and/or specifications are subject to change without notice and without any obligation on the part of manufacturer.

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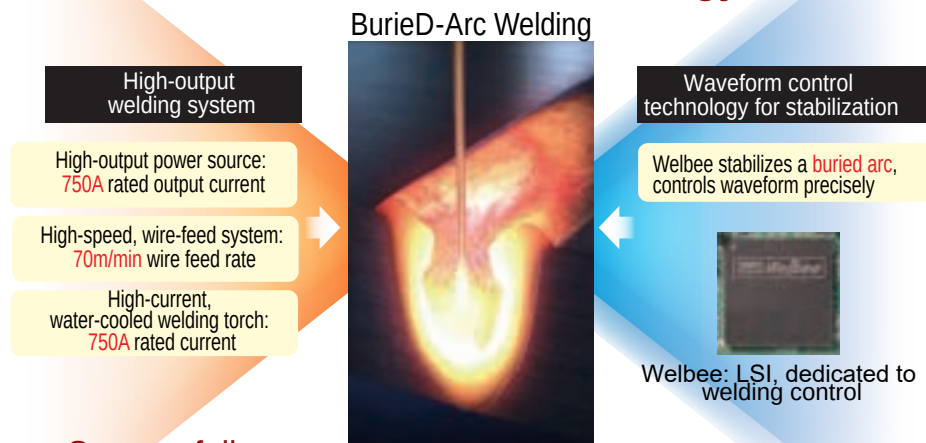
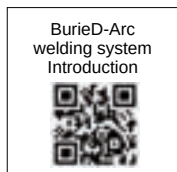
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DAIHEN Corporation



BurieD-Arc Welding Is Created With Unique Welding System And Innovated Control Technology.

The high-output welding system enables high-current welding, and the precise waveform control technology stabilizes a buried arc. The system with control technology creates BurieD-Arc welding with high-current buried arc.

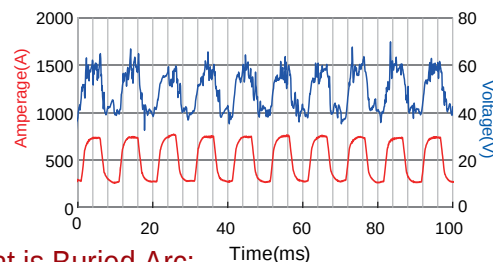


Welbee Precisely Controls Waveform, Successfully Stabilizes A High-current Buried Arc.

Stabilizing buried arc at high-current is difficult. Nevertheless, DAIHEN has mastered the process by utilizing technology in the Welbee precise waveform control. It's the first of its kind.

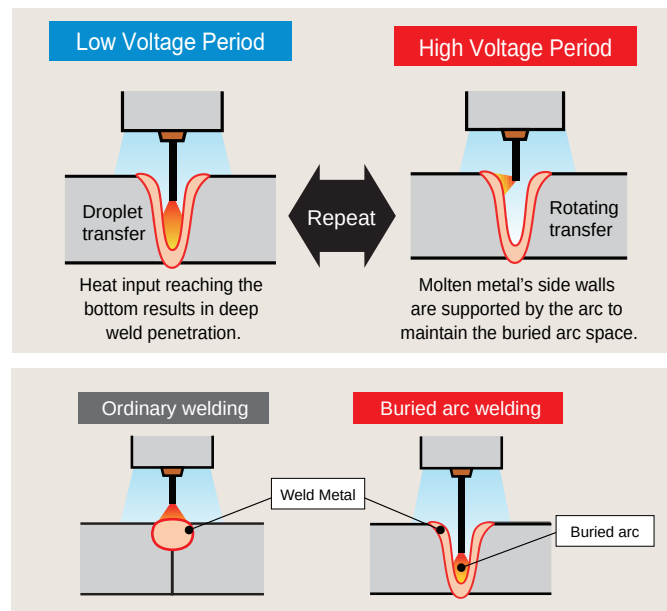
Low Frequency Modulated Voltage Control

Daihen control technology controls droplet transfer and rotating transfer by repeating low and high voltage ranges periodically, to stabilize both deep penetration and buried-arc space.



What is Buried Arc:

"Buried arc" defines an arc generating state, that a high-current arc forces welding wire into molten weld metal. It results in deep weld penetration because the base metal is heated deeply.

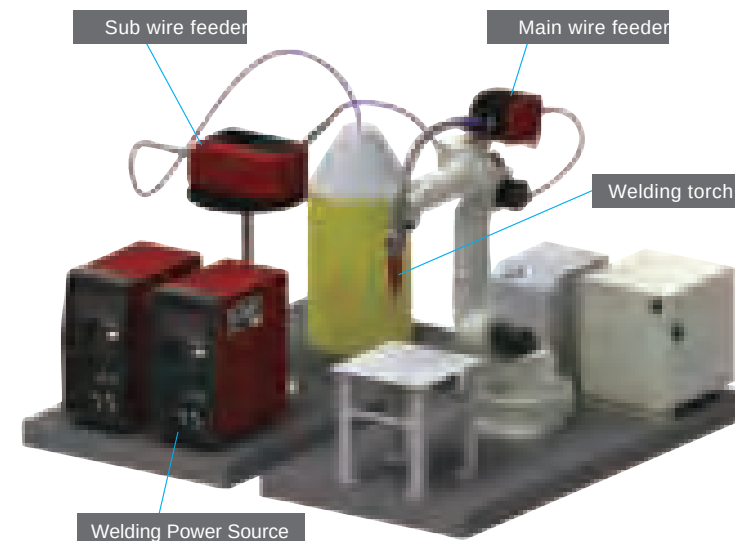


High-efficiency Welding Achieved By One-pass Welding On Up To 19-mm Thick Steel Plate Creates.

Comparison	Conv. Multi-pass Welding	BurieD-Arc welding	Welding cost (1-m weld length)
Welding procedure	6 passes 	1pass 	Reduced to approx. 15% Conv. multi-pass welding D-Arc welding
		*With backing	

Available in Manual and Automated Configurations

Robot / Automatic / Semi-Automatic



Rated wire feed speed: 230ft /min

Manual

Single configuration or parallel configuration operable according to application.

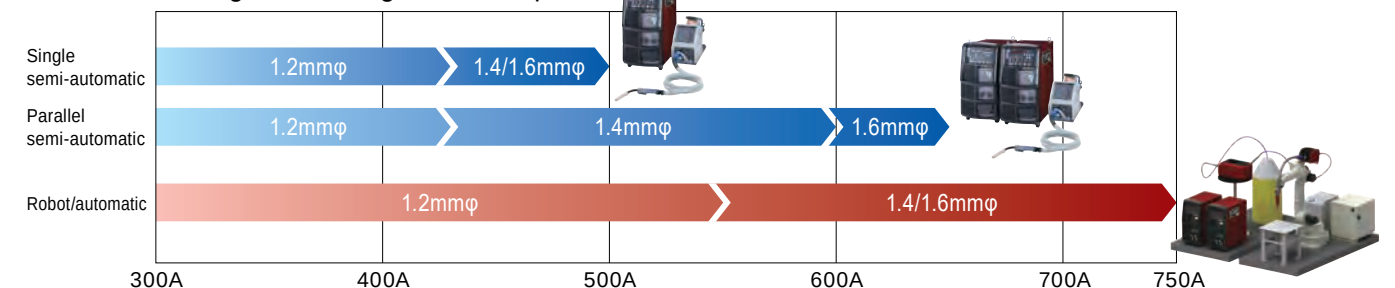


Single Configuration

Parallel Configuration

Rated wire feed speed: 72 ft/min

■ Suitable welding current range for each spec



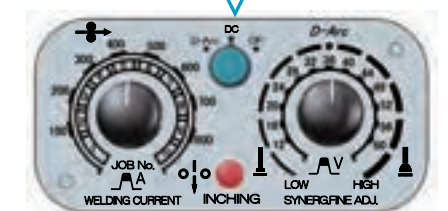
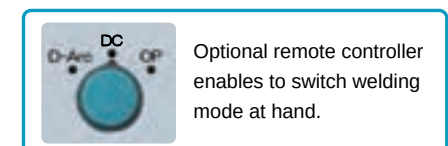
*Figures in the bar chart show wire diameters.
*Duty cycle differs depending on torch rating.
*Optional when the welding current is 650A or more.

■ List of welding modes

Welding process	Shielding gas	Applicable welding wire	Wire dia.(mmφ)		
			1.2	1.4	1.6
BurieD-Arc	CO ₂	Mild steel solid	○	○	○
DC	CO ₂	Mild steel solid	○	○	○
		Mild Steel Cored	○	○	○
		Stainless Cored	○	-	○
	MAG	Mild steel solid	○	○	○
	MIG	Stainless solid	○	-	○

CO₂/ MAG/ MIG mode is also equipped for DC

*When using semi-automatic specifications, DC gouging and DC Stick can be used as options.



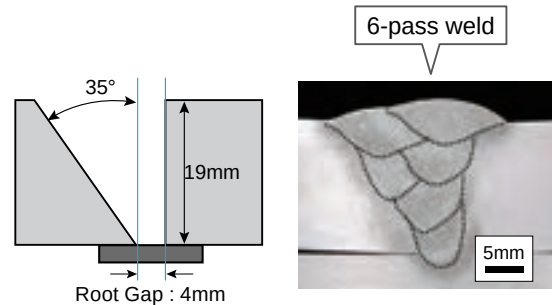
Manual Configuration

Welding current
at approx. 500A

Achieve High-efficiency Welding On Thick-plate

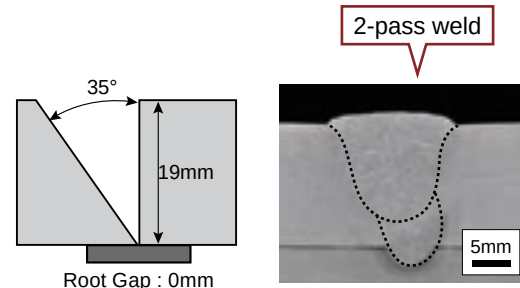
By applying Buriedd-arc mode to multi-layer welding at welding current range (500A) for semi-automatic welding, 19-mm thick plates can be welded with two passes, thereby welding efficiency can be improved.

Example of conventional welding procedure



Weld pass	1~6 pass
Welding current	300A
Arc voltage	30V
Wire feed rate	7.2m/min

Buriedd-arc D-Arc welding



Weld pass	1st pass	2nd pass
Welding current	500A	440A
Arc voltage	42.5V	39.5V
Wire feed rate	15.9m/min	13.0m/min

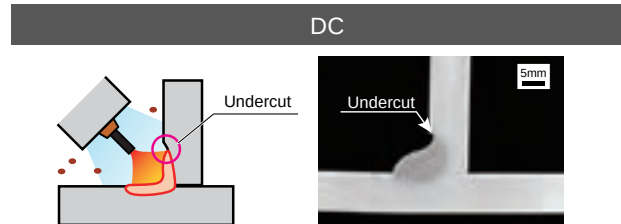
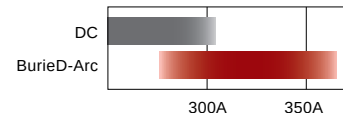
BuriedD-Arc reduces the number of weld passes by $\frac{1}{3}$ times compare to conventional process.

Welding current
at approx. 350A

Buried-arc Mode Creates High-quality Welding

On BuriedD-Arc mode with buried arc, welding current can be increased without undercut welding defect occurs, therefore a higher welding current can be used compare to on conventional DC mode.

■Comparison of suitable welding current range for horizontal fillet welding



With conventional DC mode, the use of high current causes a broaden arc, generates undercut.

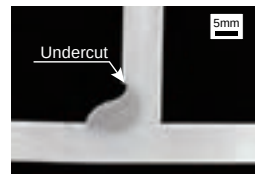
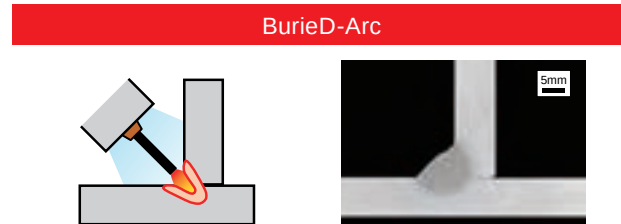


Plate thickness ; 9mm
Welding current ; 320A
Arc voltage ; 35V
Welding speed ; 45cm/min
Weaving ; ± 3 mm/2Hz



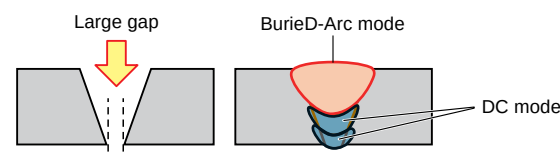
With BuriedD-Arc mode, an arc generates deeply in the base metal, so undercut is unlikely to occur and welding with fewer spatter is possible.



Plate thickness ; 9mm
Welding current ; 320A
Arc voltage ; 31.5V
Welding speed ; 45cm/min
Weaving ; ± 3 mm/2Hz

Example of applicable combination of welding modes

For a workpiece that has a root gap and no backing can be applied, DC mode can be used for 1st and 2nd layers, and BuriedD-Arc mode can be used for 3rd and subsequent layers, thereby reducing the number of passes in multilayer welding.



Robot / Automated / Semi-Automated Configuration

Welding current
at approx. 600A

Robot / Automated / Semi-Automated welding system maximizes the potential of BuriedD-Arc mode

Using BuriedD-Arc on robot/automatic welding system, forms high accurate weld beads, maximizes welding current. Also, 20 mm or thicker plates can be welded by multilayer welding.

Examples of welding procedure

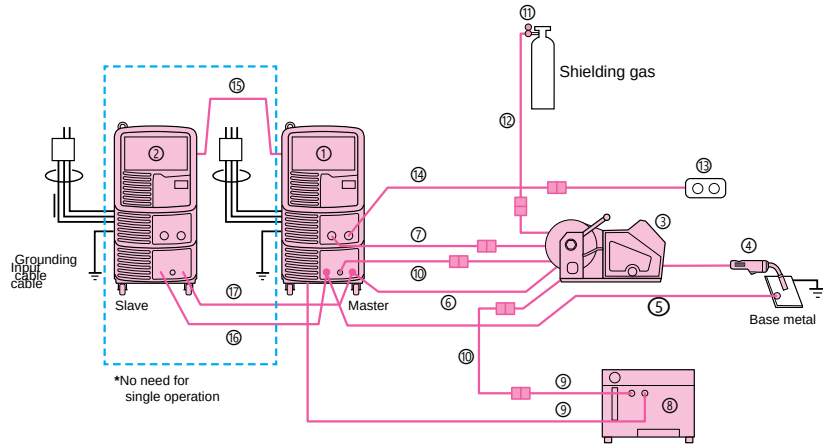
Item	Condition	Groove shape	Macrograph
Plate thick.	19mm		
Groove shape	Single bevel		
Root gap	0mm		
Backing	Ceramic		
Welding amp.	580A		
Arc voltage	48V		
Welding speed	24cm/min		

Item	Condition	Joint configuration	Welding position	Macrograph
Plate thick.	12mm/16mm			
Groove shape	Square			
Root gap	0mm			
Backing	None			
Welding amp.	Face:530A, Back:440A			
Arc voltage	Face:43V, Back:38V			
Welding speed	30cm/min			

Item	Condition	Groove shape	Macrograph
Plate thick.	40mm		
Groove shape	V-groove (40deg)		
Root gap	0mm		
Backing	Steel		
Welding amp.	1~4L:580A, 5L:480A		
Arc voltage	1~4L:45.5V, 5L:38V		
Welding speed	30cm/min		

Item	Condition	Groove shape	Macrograph
Plate thick.	35mm		
Groove shape	Double-V groove		
Root gap	0mm		
Backing	None		
Welding amp.	620A		
Arc voltage	47V		
Welding speed	30cm/min		

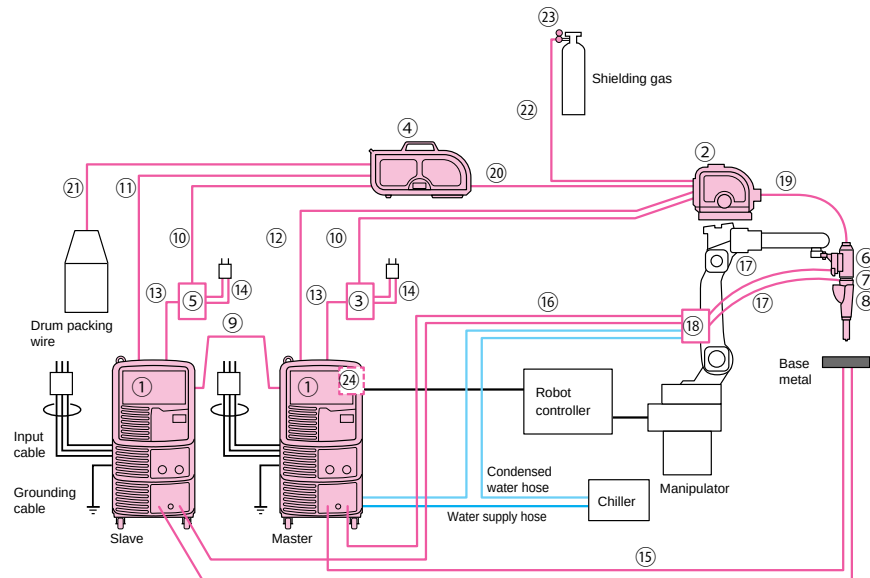
Manual Configuration



*1 Depending on the area in which a power source is used, the specification is different.
*2 No need for single operation.

Name of parts	Part No. (Model)
① Power source (Maser)	WB-DPS
② Power source (Slave)	WB-DPS
③ Wire feeder	CMW-7403
④ Welding torch	BTW500-50
⑤ Power cable, 7 m	BKPT-6007
⑥ Power cable, 10 m	BKPT-6012
⑦ Feeder control cable, 10 m	BKCPJ-1010
⑧ Water pump	PU-701
⑨ Water hoses	BBPU-3002
⑩ Water hoses (for ext.)	BKWR-0610
⑪ Gas regulator	*1
⑫ Gas hose (for ext.), 10 m	BKGG-0610
⑬ Remote controller	K8036Z00
⑭ Remote controller ext. cable	BKCPJ-0610
⑮ Communication cable(PS to PS)*2	BKCDP-01
⑯ Power cable(PS to PS), 2 m *2	BKPT-3802
⑰ Power cable(PS to PS), 2 m *2	BKPT-3802

Robot / Automated / Semi-Automated Configuration



Name of parts	Part No. (Model)
① Power source(Maser/Slave)	WB-DPS
② Pull feeder	DF-PL-E
③ AC servo wire feed control device (for pull feeder)	DFC-PL
④ Push feeder	DF-PS-E
⑤ AC servo wire feed control device (for push feeder)	DFC-PS
⑥ Welding torch	DTWH6500S
⑦ Shock sensor	SSV-R
⑧ Torch attachment bracket	L10620F00
⑨ Communication Cable (PS to PS)	BKCDP-01
⑩ Control cable(for motor and encoder)	BKCDM-10
⑪ Control cable(for Angle sensor line)	BKCDV-10
⑫ Control cable (for gas electromagnetic power line)	BKCDV-10
⑬ Communication cable	BKCDC-02
⑭ Power cable, 2set	BKPD-05
⑮ Power cable, 10 m, 2set	BKPT-8012
⑯ Power cable, 10 m, 2set	BKPT-8012
⑰ Water cooling power cable	U6205D00
⑱ Connection block	K-8026
⑲ Single-wire power cable	L-10621
⑳ Conduit (push feeder to pull feeder)	L10597E00
㉑ Conduit (push feeder to drum packing wire)	L10599B00
㉒ Gas hose, 20 m	BKGG-0620
㉓ Gas regulator	*1
㉔ Interface unit *2	IFR-101WB IFR-800EI IFR-800PB

*1 Depending on the area in which a power source is used, the specification is different.
*2 When connecting to another company's robot or automatic machine

Input Power Capacity and Cables Specifications

Model		WB-DPS(Single) ^{*1}
Input voltage		340 to 460 V
Phase		Three phase
Input power capacity		30 kVA or more
Protective device	Fuse	50 A
	No-fuse breaker (or leakage breaker) ^{*2}	50 A
Input side power cable		10mm ² or more to 38mm ² or less
Base metal/Feeder power cable ^{*3}		60mm ² or more
Grounding cable		10mm ² or more to 38mm ² or less

*1 Be sure to install a switch with fuse or a circuit breaker (for motor) to the input side of each welding power source.
*2 When using a no-fuse breaker, use a motor breaker.
*3 One is required for one welding power source.
* Depending on the area in which a power source is used, the specification is different.

Manual Configuration

Product name	Item	Specifications			
Power source	Model	WB-DPS			
	Rated input voltage	400V(50/60 Hz)			
	Input voltage range	340 to 460 V			
	Number of phases	Three phases			
	Rated input	28.3KVA (26.0kW)	24.8KVA (22.8kW)	44.1kVA (39.9kW)	50.4kVA (46.4kW)
	Welding method	D-Arc (Single)	DC (Single)	D-Arc (Parallel)	DC (Parallel)
	Rated duty cycle	50%	60%	100%	100%
	Rated output current	500A	39V	650A	750A
	Rated load voltage	45V		55V	
	Output current range	30 to 500A	50 to 650A	50 to 750A	
Wire feeder	Rated output voltage range	15.5 to 45V	16.5 to 55V		
	Maximum no-load voltage	109 V			
	External dimensions	W395 × D710 × H810 mm (w/o protruding portions of eyebolts, etc)			
	Mass	79 kg			
Welding torch	Model	CMW-7403			
	Use	For semi-auto welding			
	Wire diameter *4	1.2,(1.4),1.6mm			
	Wire feeding speed	Max 22 m/min			
Feeder unit side power cable	External dimensions	W254 × D611 × H393mm			
	Mass	14kg			
	Model	BTW500-50(30)			
	Wire diameter *4	(1.2),(1.4),1.6mm			
Base metal side power cable	Rated current	CO ₂ :500A MAG:450A			
	Duty cycle	100%			
	cooling system	Water cooling			
	cable length	5m (3m)			
Power cable (PS to PS)	Model	BKPT-6012			
	Cable size	60 mm ²			
Communication cable (PS to PS)	Model	BKPT-3802			
	Cable size	38 mm ²			
Control cable	Model	BKCDP-01			
	Model	BKCPJ-1010			
Gas regulator	Model	*5			
	Model	PU-701			
Water-cooled pump	Water hose	BBPU-3002			
	Water hoses(for ext.)	BKWR-0610			

Standard Accessories

Product name	Part No.(Model)
●Power source	WB-DPS
Feed roll (1.4/1.6)	2 (K5439B01)
Parallel connection parts	1 (K8116C00)
Allen wrench No.8	1
Pan head machine screw	4
●Wire feeder	CMW-7403
Gas hose	1
Water hose	2
●Welding torch	BTW500-50
Heat Shield	1 (U6257E00)

Options

Extension cable

Name of parts	Part No. (Model)			
	5m	10m	15m	20m
Power cable	BKPT-6007	BKPT-6012	BKPT-6017	BKPT-6022
Gas hose	BKGG-0605	BKGG-0610	BKGG-0615	BKGG-0620
Feeder control cable(10-core)	BKCPJ-1005	BKCPJ-1010	BKCPJ-1015	BKCPJ-1020
Analog remote control cable	BKCPJ-0605	BKCPJ-0610	BKCPJ-0615	BKCPJ-0620
Water hose	BKWR-0605	BKWR-0610	BKWR-0615	BKWR-0620

Analog remote control

Product name	Part No. (Model)
Analog remote control	K8116B00

Heat shield (Wide)

Product name	Part No. (Model)
Heat shield	U6257F00

Interface for robots by other manufacturer

Product name	Part No. (Model)
Interface	IFR-101WB

Welbee Fieldbus connection tool

Product name	Part No. (Model)
For EtherNet/IP	IFR-800EI
For PROFIBUS	IFR-800PB

Wire feeder/welding torch for robots and automatic machine

Product name	Item	Specifications	
Pull feeder	Model	DF-PL	
	Wire diameter	(1.2),1.4,(1.6)mm	
	Wire feeding speed	Max 70 m/min	
Push feeder	External dimensions	W328 × D297 × H266mm	
	Mass	9 kg	
	Model	DF-PS	
Welding torch (straight)	Wire diameter	(1.2),1.4,(1.6)mm	
	Wire feeding speed	Max 70 m/min	
	External dimensions	W268 × D646 × H322mm	
Welding torch (curved)	Mass	19 kg	
	Model	DTWH6500S	
	Wire diameter	(1.2),1.4,(1.6)mm	
Welding torch (curved)	Rated current	750 A	
	Duty cycle	100%	
	Cooling system	Water cooling	
Welding torch (curved)	Model	DTWH6500H	
	Wire diameter	(1.2),1.4,(1.6)mm	
	Rated current	750 A	
Welding torch (curved)	Duty cycle	100%	
	Cooling system	Water cooling	

*4 When using a wire with the diameter indicated in the parentheses, an optional part is necessary.

*5 Depending on the area in which a power source is used, the specification is different.