

Submerged Arc Components

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Submerged
Arc Welding 

Quick Specs

Heavy Industrial Applications

Railcar
Shipbuilding
Heavy Fabrication
Pipe Industry
Pressure Vessel

Processes

Submerged Arc (SAW)
Electroslag (ESW)
GMAW Spray
(with customer-supplied solenoid)

The Power of Blue.®



HDC 1500 Controller

Adaptable AC/DC, CC/CV control for use in several Sub Arc applications.



Summit Arc 1000 and 1250

Three-phase primary power input reduces primary input amperage, input fuse size and input primary cable, with the additional benefit of lower initial hookup costs.

Patented variable balance AC squarewave technology provides six unbalanced variables for optimum performance.

- | | |
|--------------------------|--------------------------|
| 1. 66% EP/34% EN @ 60 Hz | 4. 30% EP/70% EN @ 18 Hz |
| 2. 34% EP/66% EN @ 60 Hz | 5. 60% EP/40% EN @ 18 Hz |
| 3. 70% EP/30% EN @ 18 Hz | 6. 40% EP/60% EN @ 18 Hz |



Look no further than Miller to find the industry's most advanced Sub Arc welding solutions — featuring the flexible HDC 1500 controller, and Summit Arc, the only 1000-amp, three-phase AC squarewave machine in the welding industry! We offer complete systems that can make you more productive and help lower your weld costs with less power consumption, increased deposition rates, and faster travel speeds!

TRUE BLUE
3YR. WARRANTY

3 years — parts and labor; original main power rectifier parts are warranted for 5 years. Reliability built into each controller.

MADE IN **USA**
APPLETON, WI **USA**



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An Illinois Tool Works Company
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Appleton, WI 54914 USA

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USA FAX: 920-735-4134
Canadian FAX: 920-735-4169
International FAX: 920-735-4125

Web Site
www.MillerWelds.com



HDC 1500 Controller

Sequences

Jog speed allows operator to jog wire at a given rate independent from weld wire feed speed for more accurate joint alignment.

Pre-flux time drops flux for a predetermined time to ensure operator is welding in a flux bed.

Run-in speed gives operator more flexibility to fine tune wire feed speed before welding to ensure a good starting condition.

Crater burnback can be used in CC or CV and is an adjustable % of amperage or voltage. Used to fine tune crater parameters and free wire from the weld puddle.

Crater speed is an independent wire feed speed used to fine tune crater parameters.

Crater time allows operator to consistently fill crater at the end of the weld sequence to eliminate potential weld defects.

Burnback time provides a timed function that ensures the weld wire has been freed from the solidified weld puddle, eliminating potential damage to torch and components.

With **postflow time**, a dry set of contacts in the control operates a gas solenoid allowing the customer to also use the GMAW welding process with the same control (solenoid supplied by customer).



Sequence access door allows operator easy access to make weld sequence adjustments.

Indicator light lets operator know that the unit is energized.

Internal terminal strip is able to integrate with other power sources and peripheral equipment.

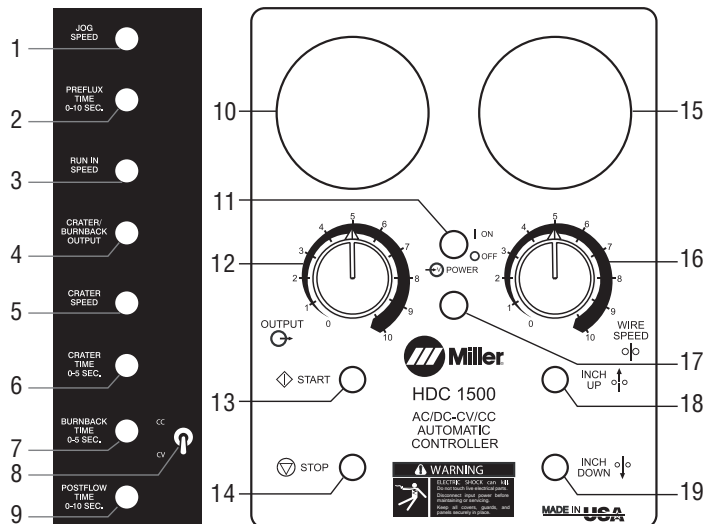
Specifications (Subject to change without notice.)



Type of Input from Welding Power Source	Welding Power Source Type	Weld Voltage and Amperage Capacity (AC or DC)	Dimensions	Weight
Single-phase 115 VAC, 3.5 Amps, 50/60 Hz	Constant Current (CC), Constant Voltage (CV), AC or DC, with Remote Contactor and Output Control Capabilities	0–60 V 0–1500 A	H: 7 in (178 mm) W: 11-1/4 in (286 mm) D: 11-1/2 in (292 mm)	18 lb (8.2 kg)

Control Panel

- | | |
|-------------------------------|----------------------------------|
| 1. Jog Speed | 11. Power Switch |
| 2. Preflux Time 0–10 Seconds | 12. Output Control Knob |
| 3. Run-In Speed | 13. Start Button |
| 4. Crater/Burnback Output | 14. Stop Button |
| 5. Crater Speed | 15. Amperage Meter |
| 6. Crater Time 0–5 Seconds | 16. Wire Feed Speed Control Knob |
| 7. Burnback Time 0–5 Seconds | 17. Indicator Light |
| 8. CC/CV Switch | 18. Wire Inch Up |
| 9. Postflow Time 0–10 Seconds | 19. Wire Inch Down |



Inside Side Access Door

Summit Arc 1000™/1250 Power Sources (See Literature Index No. AD/7.0 for additional information.)

The only AC/DC, CC/CV, 1000-amp, three-phase AC squarewave machine in the welding industry.

AC squarewave provides excellent arc starting and positive arc re-ignition throughout the weld cycle for superior arc performance and quality.

Phase-shifting capability and optional variable balance plugs refine arc for specific needs.



Terminal strip provides flexibility for hooking up a remote contactor, voltage and current control, and also running non-Miller products.

Fan-On-Demand™ cooling system only works when needed reducing energy usage and noise.

Specifications (Subject to change without notice.)



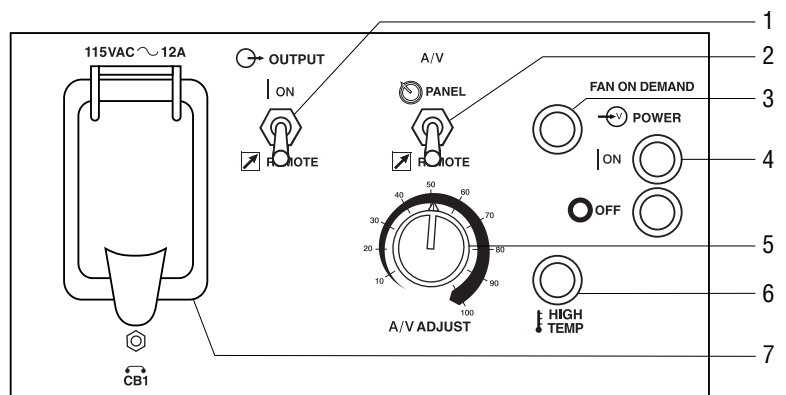
AC or DC Rated Output (Based on a 10 minute duty cycle)	Amperage/Voltage Range	Max. Open-Circuit Voltage	RMS Amps Input at Rated Load Output, 3-Phase at NEMA Load Voltages and Class I Rating				Dimensions	Weight	
			400V (50/60 Hz)	460V (60 Hz)	575V (60 Hz)	KVA			KW
1000 A at 44 V, 100% Duty Cycle; 1250 A at 44 V, 60% Duty Cycle	250–1250 A in CC mode 25–44 V in CV mode	71 V	140 3*	124 3*	100 3*	98 2.37*	53 0.95*	H: 44 in (1118 mm) W: 27-1/4 in (692 mm) D: 46 in (1168 mm)	1225 lb (540 kg)

*While idling.

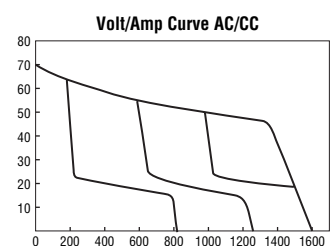
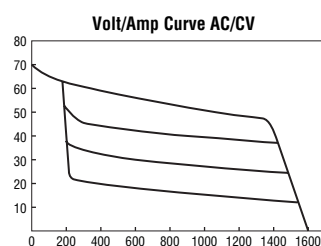
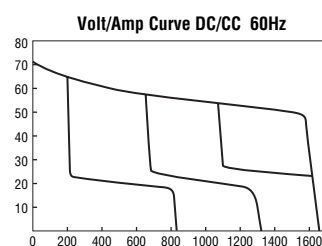
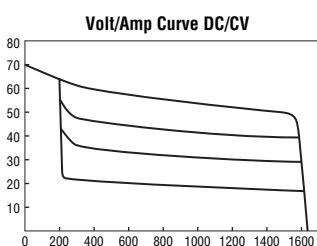
Control Panel

1. Output Control Switch
2. A/V (Amperage/Voltage) Control Switch
3. Power On Indicator Light
4. Power Pushbutton Switch
5. A/V (Amperage/Voltage) Adjustable Control
6. High Temperature Shutdown Indicator Light
7. Duplex Receptacle
(115 VAC, 12 A on 460 and 575 V models;
230 VAC, 16 A on 400 V models)

Note: CC/CV Switch is mounted inside access area.



Performance Data



Dimension™ 652/812 and 1000/1250 Power Sources (See Lit. Index No. DC/19.2 for additional information.)

The powerful Dimensions provide outstanding versatility, plus the endurance and high amperage output to handle the biggest heavy industrial applications.

DC multiprocess capability, versatility and outstanding performance in CV and CC processes.

Line voltage compensation keeps welding parameters constant even when input voltages change $\pm 10\%$. Eliminates need to change welding parameters throughout the day.

Fan-On-Demand™ cooling system only works when needed reducing energy usage and noise.



15 amp 115 VAC duplex receptacle allows operators the flexibility to run grinders, drills, coolers, etc. from the power source without the need for additional 115 VAC power in the weld area.

Power efficient for exceptional value and return on your investment.

Digital meters for presetting and monitoring welding voltage or amperage for more precise control.

Remote control capability allows operators fine tuning capability at an extended distance.

Specifications (Subject to change without notice.)



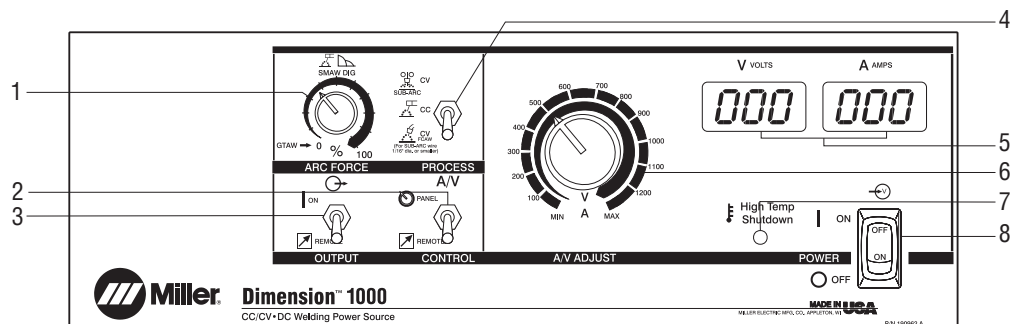
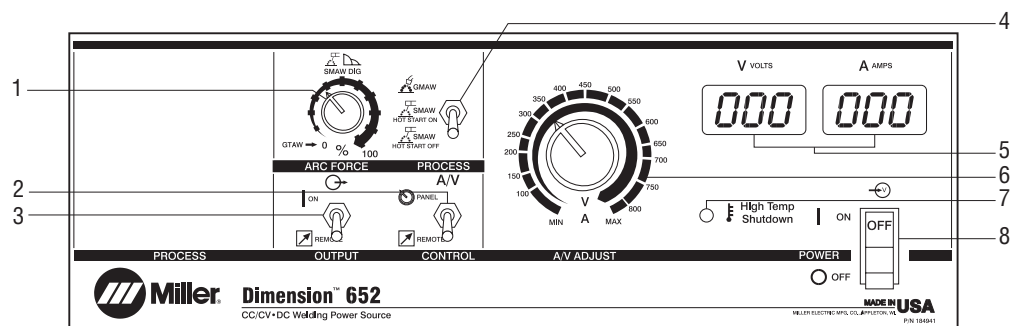
Model	Rated Output	Mode	Amperage/Voltage Range	Max. Open-Circuit Voltage	Amps Input at Rated Load Output, 3-Phase, 50/60 Hz								Dimensions	Weight
					230 V	380 V	400 V	440 V	460 V	575 V	KVA	KW		
Dimension 1000/1250	1000 A at 44 VDC, 100% Duty Cycle; 1250 A at 44 VDC, 60% Duty Cycle	CC	100–1250 A	66 VDC	180	109	104	94	90	72	73	53	H: 27-1/4 in (692 mm) W: 22-1/4 in (565 mm) D: 36 in (914 mm)	644 lb (292 kg)
		CV	10–65 V	38 VDC										
Dimension 652/812	650 A at 44 VDC, 100% Duty Cycle	CC	50–815 A	72 VDC	126	77	73	66	63	50.4	50	34.8		
		CV	10–65 V	70 VDC										

CS® (Without CE) certified by Canadian Standards Association to both Canadian and U.S. Standards.

CE 50/60 Hz models with CE Specifications are manufactured according to the Standards IEC-974-1 and EN-60974-1.

Control Panels

1. Arc Force (DIG) Control
2. Remote Amperage/Voltage Control Switch
3. Output Switch (Contactor)
4. Process Switch
5. Digital Meters
6. Amperage/Voltage Adjustment Control
7. High Temperature Shutdown Indicator Light
8. Power Switch with Indicator Light



Deltaweld® 652/852 Power Sources (See Literature Index No. DC/16.2 for additional information.)

The Deltaweld 652/852 provides outstanding CV weld output to tackle even the most demanding jobs.

Line voltage compensation keeps welding parameters constant even when input voltages change $\pm 10\%$. Eliminates need to change welding parameters throughout the day.

Two positive output terminals allow operators to optimize arc performance.

Fan-On-Demand™ cooling system only works when needed reducing energy usage and noise.

Power efficient for exceptional value and return on your investment.



Enclosed circuit board provides additional protection by eliminating contaminants which cause premature failure of components.

15 amp 115 VAC duplex receptacle allows operators the flexibility to run grinders, drills, coolers, etc. from the power source without the need for additional 115 VAC power in the weld area.

Digital meters for presetting and monitoring welding voltage or amperage for more precise control.

Remote control capability allows operators fine tuning capability at an extended distance.

Specifications (Subject to change without notice.)



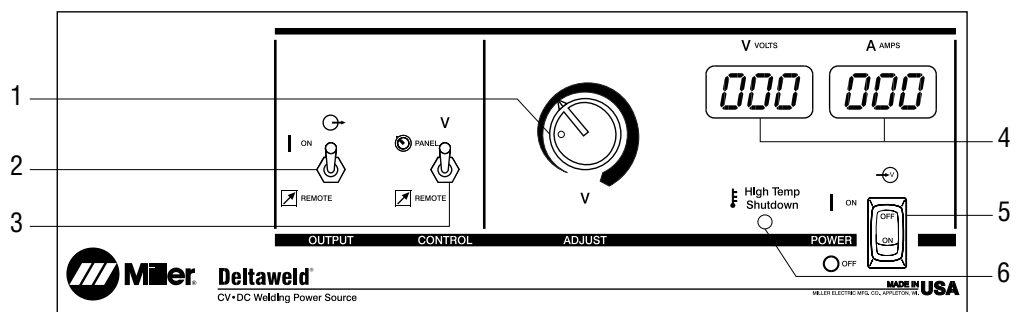
Rated Output	Voltage Range in CV Mode	Recommended Voltage Range	Max. Open-Circuit Voltage	Amps Input at Rated Load Output, 3-Phase, 50/60 Hz								Dimensions	Weight
				230 V	380 V	400 V	440 V	460 V	575 V	KVA	KW		
650 A at 44 VDC, 100% Duty Cycle	10–44 V	15–44 V	54 VDC	96	58	54	50	48	38	38.2	34.2	H: 27-1/4 in (692 mm) W: 22-1/4 in (565 mm) D: 36 in (914 mm)	472 lb (214 kg)

(Without CE) certified by Canadian Standards Association to both Canadian and U.S. Standards.

50/60 Hz models with CE Specifications are manufactured according to the Standards IEC-974-1 and EN-60974-1.

Control Panel

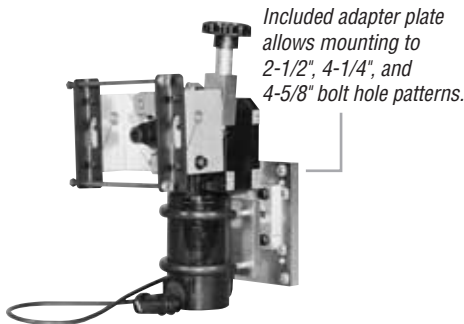
1. Voltage Adjustment Control
2. Output Switch
3. Remote Voltage Control Switch
4. Digital Meters
5. Power Switch with Indicator Light
6. High Temperature Shutdown Indicator Light



Components

New Right Angle Drive Assemblies

Miller offers a 115-volt heavy-duty wire drive assembly in either low- or standard-speed. The RAD-400 has a wire feed speed range of 0–400 inches per minute (0–10 MPM). The RAD-780 has a wire feed speed range of 0–780 IPM (0–19.8 MPM). These motors can be used in tandem applications or right or left hand configurations. These motors also have 3 adjustable swivel points for more flexibility.



Low-Speed Right Angle Drive Motor
#194 764 RAD-400

Standard-Speed Right Angle Drive Motor
#194 763 RAD-780

New Drive Rolls

Select drive roll from chart below according to type and wire size being used and type of wire drive assembly.

Wire size	"V" knurled for hard-shelled cored wires
1/16 in (1.5 mm)	#132 955
5/64 in (2.0 mm)	#132 960
3/32 in (2.4 mm)	#132 961
7/64 in (2.8 mm)	#132 962
1/8 in (3.2 mm)	#132 963
5/32 in (3.9 mm)	#193 700
3/16 in (4.7 mm)	#193 701
7/32 in (5.5 mm)	#193 702

Submerged Arc Torches



OBT 600 #043 923
600 amp, 100% duty cycle torch with concentric flux flow nozzle. Can be used with 1/16–7/32 in (1.6–5.5 mm) wire.

OBT 600 Torch Body Extensions
#043 967 1 inch
#043 969 2 inch
#043 973 4 inch
#043 975 6 inch



OBT 1200 #043 900
1200 amp, 100% duty cycle torch with concentric flux flow nozzle. Can be used with 1/16–7/32 in (1.6–5.5 mm) wire

OBT 1200 features a replaceable breakaway adapter end to prevent costly damage should torch run into an obstruction.

OBT 1200 Torch Body Extension #043 981 9 inch

Overall length with extension is 9 in. Actual length of extension is 8-1/2 in.

Torch Contact Tips

Wire size	OBT 600	OBT 1200
1/16 in (1.6 mm)	#192 700	#192 141
5/64 in (2.0 mm)	#192 701	#199 026
3/32 in (2.4 mm)	#192 702	#192 142
7/64 in (2.8 mm)	#192 703	#200 771
1/8 in (3.2 mm)	#192 704	#192 143
5/32 in (4.0 mm)	#192 705	#192 144
3/16 in (4.8 mm)	#192 706	#192 136
7/32 in (5.6 mm)	#192 707	#200 756

New Flux Handling Equipment



Flux Hopper with Valve #194 775

Our new flux hopper with patent-pending automatic flux valve will carry 25 lb of flux. It also has the same size opening to allow hook up of any hopper mounted recovery system. A slag screen is also provided.

Flux Valve, Inline Mechanical #043 997
Manually operated flux valve designed to fit in the flux tube. This gives you the flexibility to position the valve where you want it, between the hopper and torch.

Flux Recovery Systems

Weld Engineering: 1-508-839-9875
American Vacuum: 1-800-321-2849
Invincible: 1-800-282-6999

Accessories

NEW! Cable Kit for HDC #195 020
Includes 30 ft (9 m) 14-pin interconnect cable and 10 ft (3 m) motor cable.

Wire Straightener #199 733
For RAD-400 (low-speed) and RAD-780 (standard-speed) drive motors.
For wires 1/16–7/32 in (1.6–5.6 mm)

Burden Resistor Relay Kit #198 215
Option needed for touch sense start when using competitive controller.

LN-9/NA5 Adapter #194 765
Allows the Lincoln LN-9 to plug into Miller power supply via 14-pin connection.

Parallel Kit #194 711
Allows easy connection of two Miller power supplies for increased amperage applications.

Swivel Mount #071 294*
The wire drive assembly attaches to the swivel mount allowing a 360° rotation for quick gun positioning across the weld joint. Able to mount directly to 90° angle mounting brackets or cross slides.

90° Angle Mounting Bracket #082 175*
When a bi-directional adjustment (across and with the weld) is desired, two swivel mounts can be installed using the 90° angle mounting bracket.

Cross Slide #194 695*
Allows 6 in of travel adjustment. Two units can be stacked to provide vertical and horizontal movement.

*Swivel mount, wire drive assemblies, 90° angle mounting bracket and cross slide have 4-1/4 x 4-1/4 bolt-hole pattern. **Not recommended for tandem.**

Heavy-Duty Cross Slide #194 783
1 in diameter, precision, hardened and ground guide rods which provide a perfect path for the sealed linear ball bushings, providing ease of and accurate movement of the weld head. Provides 6 in of travel adjustment and has a load capacity of 200 lb.



Wire Reel #108 008
For 60 lb (27 kg) coil of wire. Requires Spool Support Assembly (#119 438).

Wire Reel Cover #058 256
For 60 lb (27 kg) coil.

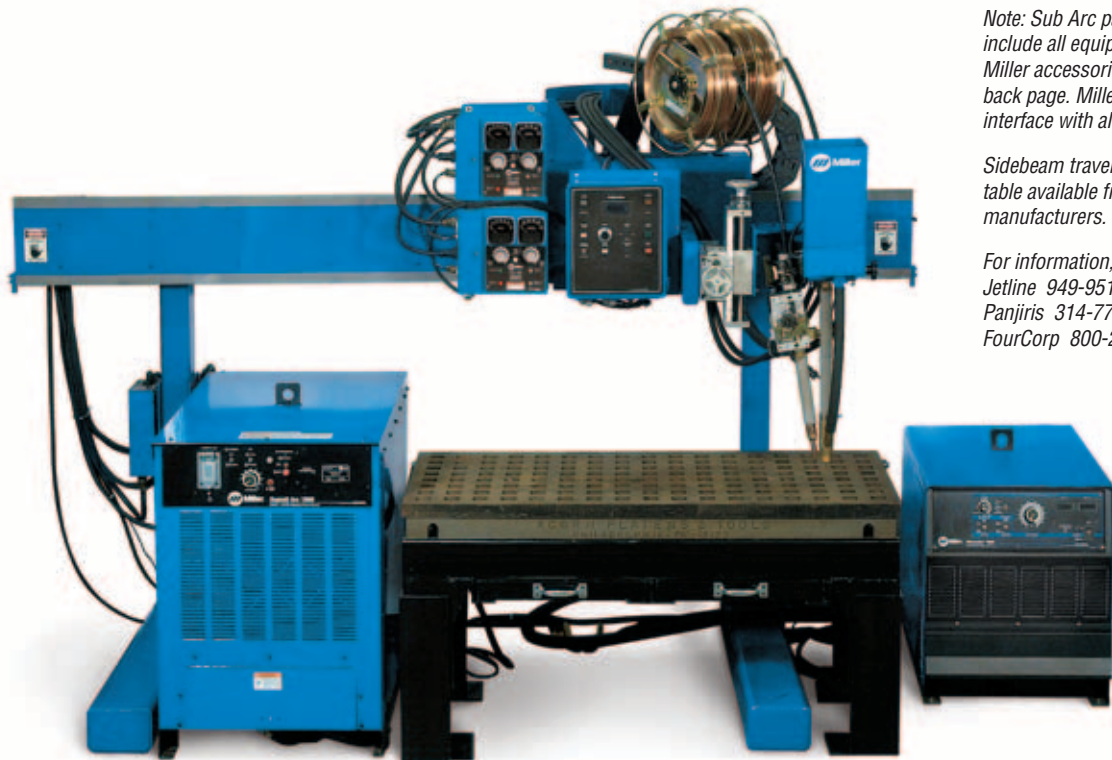
Extension Cables #043 725 (726, 727)
25 ft (7.6 m) 14-pin welding power source control cord. Extends distance between power source and controller.

Shunt Control for HDC 1500 #195 052
Provides current feedback from competitive power source.

Spool Support #119 438
Support for 60 lb reels.

Hub and Spindle #072 094
Used for tandem wires.

New! Submerged Arc Packages



Note: Sub Arc packages do not include all equipment shown. Miller accessories are listed on back page. Miller equipment will interface with all manufacturers.

Sidebeam travel carriage and table available from third party manufacturers.

*For information, contact
Jetline 949-951-1515
Panjiris 314-776-6893
FourCorp 800-236-3687*

Summit Arc 1000™ Package #951 016
Includes Summit Arc 1000, HDC 1500, cable kit, RAD 400, wire straightener, flux hopper with valve and OBT-1200 torch.

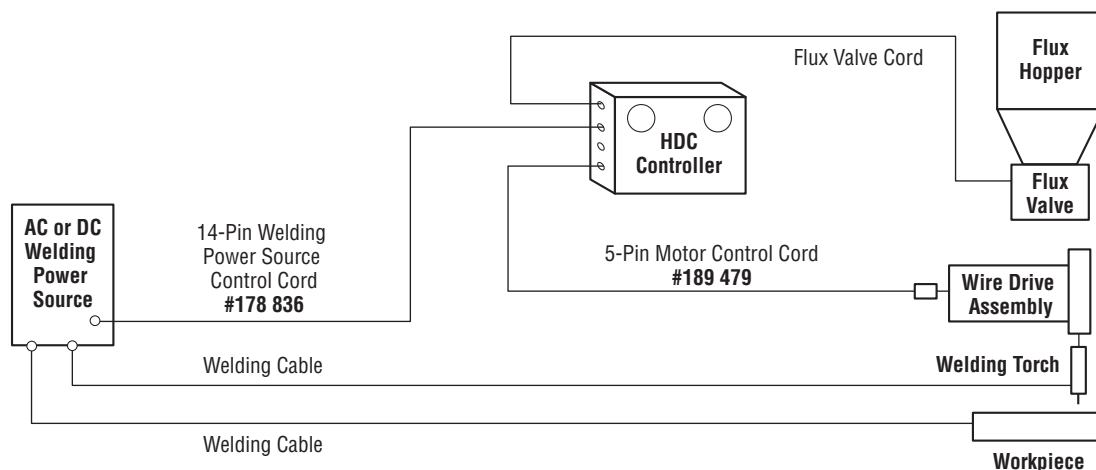
Summit Arc 1000™ Package #951 017
Includes Summit Arc 1000, HDC 1500, cable kit, RAD 400, wire straightener, flux hopper with valve and OBT-600 torch.

Dimension™ 1000 Package #951 015
Includes Dimension 1000, HDC 1500, cable kit, RAD 400, wire straightener, flux hopper with valve and OBT-1200 torch.

Dimension™ 652 Package #951 013
Includes Dimension 652, HDC 1500, cable kit, RAD 400, wire straightener, flux hopper with valve and OBT-600 torch.

Deltaweld® 652 Package #951 014
Includes Deltaweld 652, HDC 1500, cable kit, RAD 400, wire straightener, flux hopper with valve and OBT-600 torch.

Typical Installations



Recommended Power Sources

Summit Arc 1000™ See Lit. Index No. AD/7.0

#903 530 460 V
#903 599 575 V

Summit Arc 1250 #903 570 400 V, 50/60 Hz

Deltaweld® Series See Lit. Index No. DC/16.2

Deltaweld 652 #903 396 230/460/575 V, 60 Hz

Deltaweld 852 #903 397 380/400/440 V, 50/60 Hz

#903 397-01-3 380/400/440 V, 50/60 Hz w/CE

Dimension™ Series See Lit. Index No. DC/19.2

Dimension 652 #903 379 230/460/575 V, 60 Hz

Dimension 812 #903 259 380/400/440 V, 50/60 Hz

#903 482 380/520 V, 50/60 Hz

#903 259-01-4 380/400/440 V, 50/60 Hz w/CE

Dimension 1000 #903 650 230/460/575 V, 60 Hz

Dimension 1250 #903 691 380/400/440 V, 50/60 Hz

#903 691-01-1 380/400/440 V, 50/60 Hz w/CE

Ordering Information

Equipment and Options	Stock No.	Description	Qty.	Price
HDC 1500 Controller (only)	#194 937			
HDC 1500 Controller w/CE (only)	#194 937-01-1	Available May 2002		
Packages				
Summit Arc 1000™ with OBT-600 torch	#951 017	See page 7 for package contents		
Summit Arc 1000™ with OBT-1200 torch	#951 016	See page 7 for package contents		
Dimension™ 1000 with OBT-1200 torch	#951 015	See page 7 for package contents		
Dimension™ 652 with OBT-600 torch	#951 013	See page 7 for package contents		
Deltaweld® 652 with OBT-1200 torch	#951 014	See page 7 for package contents		
RAD Drive Motors				
RAD-400	#194 764	Low-speed right angle drive motor		
S 400 Package w/Wire Straightener	#950 730			
RAD-780	#194 763	Standard-speed right angle drive motor		
S 780 Package w/Wire Straightener	#950 731			
Drive Rolls		See chart on page 6		
Torches				
OBT 600	#043 923	600 amp, 100% duty cycle, air-cooled		
OBT 600 Torch Body Extensions	#043 967 #043 969 #043 973 #043 975	1 inch 2 inch 4 inch 6 inch		
OBT 1200	#043 900	1200 amp, 100% duty cycle, air-cooled		
OBT 1200 Torch Body Extension	#043 981	9 inch		
Contact Tips		See chart on page 6		
Flux Handling Equipment				
Flux Hopper with Valve	#194 775	25 lb capacity		
Flux Valve	#043 997	Inline mechanical		
Flux Recovery Systems		See page 6		
Accessories				
Cable Kit for HDC	#195 020	Includes 30 ft (9 m) 14-pin interconnect cable and 10 ft (3 m) motor cable		
Wire Straightener	#199 733	For 1/16–7/32 in (1.6–5.6 mm) wire		
Burden Resistor Relay Kit	#198 215	Required for touch sense with competitive controls		
LN-9/NA5 Adapter	#194 765			
Parallel Kit	#194 711			
Swivel Mount	#071 294	Provides 360° rotation		
90° Angle Mounting Bracket	#082 175	Allow bi-directional movement		
Cross Slide	#194 695	Provides 6-in travel adjustment		
Heavy-Duty Cross Slide	#194 783	Provides 6-in travel adjustment, load capacity of 200 lb		
Wire Reel	#108 008	For 60 lb (27 kg) coil, requires Spool Support #119 438		
Wire Reel Cover	#058 256	For 60 lb (27 kg) coil		
Extension Cables	#043 725 #043 726 #043 727	25 ft (7.6 m), 14-pin 50 ft (15.2 m), 14-pin 75 ft (22.9 m), 14-pin		
Shunt Control for HDC 1500	#195 052	Provides current feedback from competitive power sources		
Spool Support	#119 438	Support for 60 lb reels		
Hub and Spindle	#072 094	Used for tandem wires		

Date:

Total Quoted Price:

Distributed by:

