

SubArc Digital Series

**Submerged Arc
Welding Power Source**



Quick Specs



Heavy Industrial Applications

Railcar
Shipbuilding
Heavy Fabrication
Pipe Manufacturing
Pressure Vessel

Processes

Submerged Arc (SAW)
Electroslag (ESW)
Air Carbon Arc (CAC-A)

Input Power

Requires 3-Phase Power

Rated Output DC 650/800: 650 A at 44 V, 100% Duty Cycle

DC 1000/1250: 1000 A at 44 V, 100% Duty Cycle

AC/DC 1000/1250: 1000 A at 44 V, 100% Duty Cycle

Net Weight DC 6650/800: 247 kg (545 lb.)

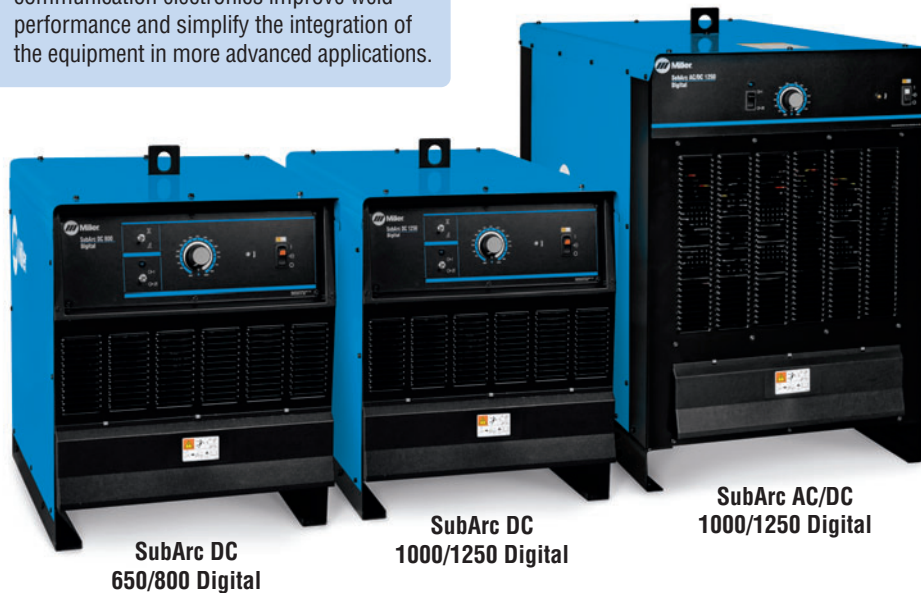
DC 1000/1250: 292 kg (644 lb.)

AC/DC 1000/1250: 540 kg (1225 lb.)

Miller SubArc Digital Series

- Choice of three power sources, two interface controls and a range of wire drive motors and accessories.
- Digital process control technology.
- Highly reliable thyristor power regulation.
- Newly designed digital control and communication electronics improve weld performance and simplify the integration of the equipment in more advanced applications.

New!



SubArc DC 650/800 Digital

SubArc DC 1000/1250 Digital

SubArc AC/DC 1000/1250 Digital

Intuitive setup and operation.

The SubArc Digital Series Interface controls recognize the power source and wire drive connected, and automatically configure the system for proper operation. The intuitive interface provides the operator the necessary controls to set process parameters and control output. The power sources feature simplified parallel and tandem setups.

Improved flux delivery system.

The new SubArc Flux Hopper utilizes a flux valve mechanism that assures continuous delivery of flux to the arc. The unique valve design helps prevent jamming of the solenoid actuator due to dust and debris. A sight glass on the front of the flux hopper allows the weld operator to visually monitor the remaining flux in the hopper.

Low-voltage accessory operation and improved environmental protection.

The new Digital Series accessories are powered with 24 VAC control voltage from the power source. All power sources, interface controls and wire drives are IP-23 rated.

All power sources include thermal overload protection, line voltage compensation and Fan-On-Demand™

Easy to integrate.

The new SubArc power sources are easy to integrate by using a standard Modbus® connection. Different levels of integration are possible, from simple remote operation to more complex automated systems.



Two DC power source models and one AC/DC power source model.

Power sources have sufficient power capacity to cover applications from traditional DC single-arc to multi-wire tandem welding. In Electroslag welding or other high-current demand, two or more power sources can easily be paralleled (both DC and AC/DC machines).



Power source is warranted for 3 years, parts and labor.
Original main power rectifier parts are warranted for 5 years.



ITW Welding – Italy S.r.l.

Via Privata Iseo 6/e
20098 San Giuliano M.se
Milano – Italy
TEL.: +39 02 982901
FAX: +39 02 98281552
Email: itw@itw-welding.it

International Headquarters Miller Electric Mfg. Co.

An Illinois Tool Works Company
1635 W. Spencer Street
Appleton, WI 54914 USA
TEL.: +1 920 735 4554
FAX: +1 920 735 4125

MillerWelds.com



SubArc DC Digital



SubArc DC 650/800 Digital and DC 1000/1250 Digital cover most single- and twin-wire applications. These traditional transformer/rectifier power sources combine high efficiency with the highest reliability, providing best-in-class welding performance and repeatability.

SubArc DC Digital Specifications (Subject to change without notice.)



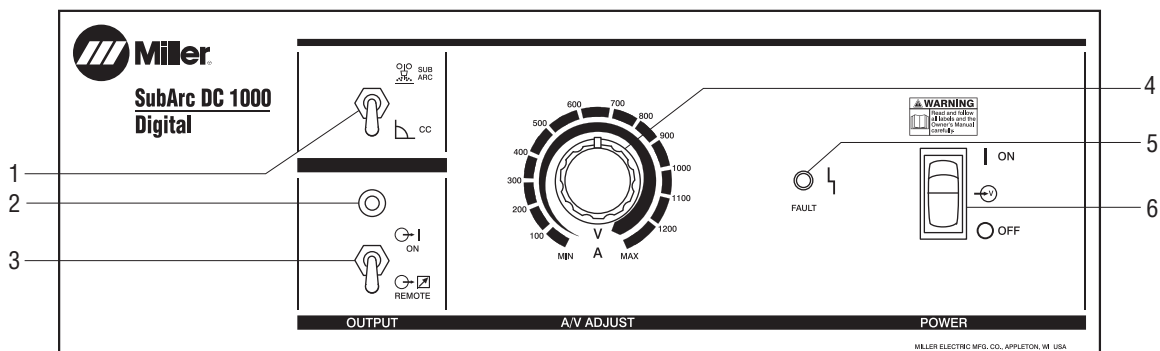
Model	Amperage/ Voltage Ranges	Rated Output	IP Rating	Amps Input at Rated Load Output, 50/60 Hz								Max. Open- Circuit Voltage**	Dimensions	Net Weight
				230 V	380 V	400 V	440 V	460 V	575 V	KVA	KW			
SubArc DC 650/800 Digital	50–815 A in CC mode 20–44 V in Subarc mode	650 A at 44 V, 100% duty cycle	IP23	126 3.8*	77 1.9*	73 1.8*	66 1.6*	63 1.9*	50.4 1.4*	50 1.52*	34.8 0.76*	72 VDC	H: 692 mm (27.25 in.) (including lift eye) W: 565 mm (22.25 in.) D: 953 mm (37.5 in.) (not including strain relief)	247 kg (545 lb.)
SubArc DC 1000/1250 Digital	100–1250 A in CC mode 20–44 V in Subarc mode	1000 A at 44 V, 100% duty cycle	IP23	180 5.8*	109 5.2*	104 5.0*	94 4.5*	90 2.9*	72 2.4*	73 3.2*	53 0.5*	66 VDC		292 kg (644 lb.)

*While idling. **Open-circuit voltages in CV mode are factory set at values less than indicated for CC.

SubArc DC 650 Digital and DC 1000 Digital models are certified by Canadian Standards Association to both the Canadian and U.S. Standards.

All SubArc DC Digital models are manufactured and certified in accordance with IEC-60974-1, -10.

SubArc DC Digital Control Panel



1. Process Selector Switch
2. Output Indicator Light
3. Output Switch (Contactor)

4. Amperage/Voltage Adjustment Control
5. Fault Indicator
6. Power Switch

SubArc AC/DC Digital



SubArc AC/DC 1000/1250 Digital. AC welding output enables the SubArc AC/DC to be used in tandem arc welding systems with a DC lead arc and AC trailing arc, or with AC/AC arc combinations. Multiple arcs increase deposition rate, resulting in shorter welding cycles. All AC balance control modes can be set directly on the digital interface. The intuitive interface

includes two DC modes and 12 best-practice AC balance settings. In multiple-arc configurations, the system automatically adjusts the phase shifting between power sources thereby eliminating arc interaction. There is no need to employ a laptop PC for complex wave shaping.

SubArc AC/DC Digital Specifications (Subject to change without notice.)



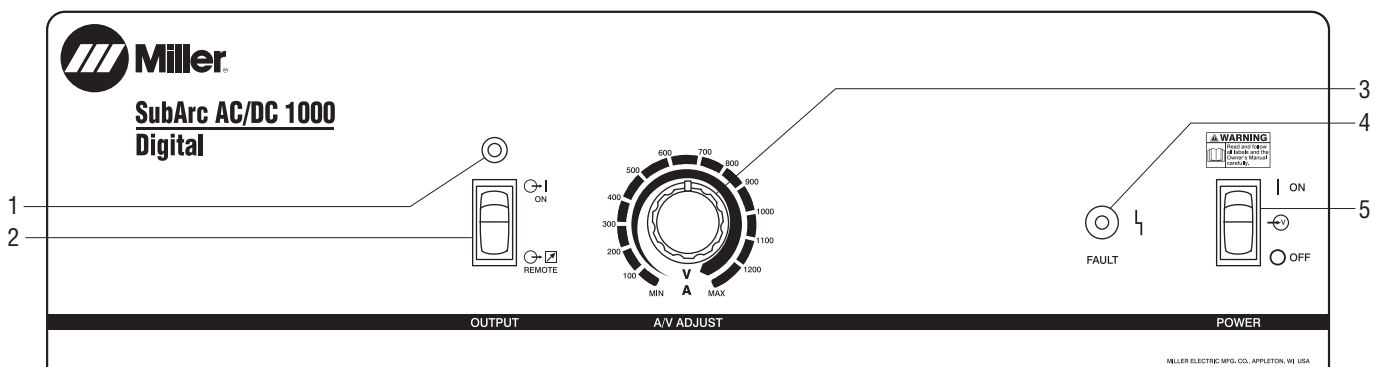
Model	Amperage/Voltage Ranges	Rated Output	IP Rating	RMS Amps Input at Rated Output, 3-Phase at NEMA Load Voltages and Class 1 Rating					Max. Open-Circuit Voltage	Dimensions	Net Weight
				380 V (50 Hz)	400 V (50 Hz)	460 V (60 Hz)	KVA	KW			
SubArc AC/DC 1000/1250 Digital	300–1250 A in CC mode 20–44 V in Subarc mode	1000 A at 44 V, 100% duty cycle	IP23	140	141	122	98	53	71 VDC	H: 1092 mm (43 in.) (including lift eye) W: 699 mm (27.5 in.) D: 1207 mm (47.5 in.) (not including strain relief)	540 kg (1225 lb.)
		1250 A at 44 V, 60% duty cycle		179	176	158	122	67			

*While idling.

SubArc AC/DC 1000 Digital model is certified by Canadian Standards Association to both the Canadian and U.S. Standards.

Both SubArc AC/DC Digital models are manufactured and certified in accordance with IEC-60974-1, -10.

SubArc AC/DC Digital Control Panel

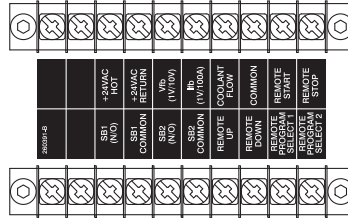


- 1. Output Indicator Light
- 2. Output Switch (Contactor)
- 3. Amperage/Voltage Adjustment Control
- 4. Fault Indicator
- 5. Power Switch

SubArc Interface



SubArc Interface Analog



Internal terminal strip is able to integrate with positioners, sidebeams, turning rolls and other peripheral equipment.



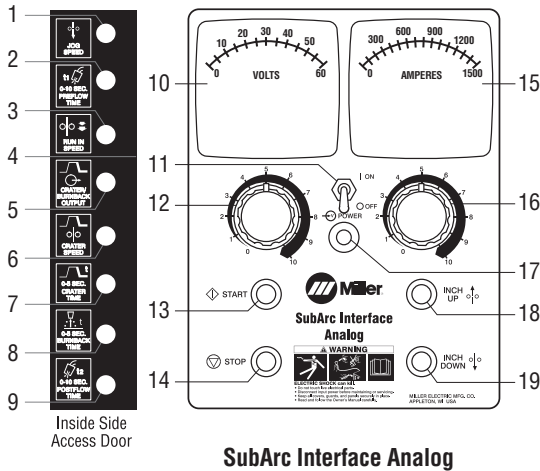
SubArc Interface Digital

SubArc Interface Specifications (Subject to change without notice.)

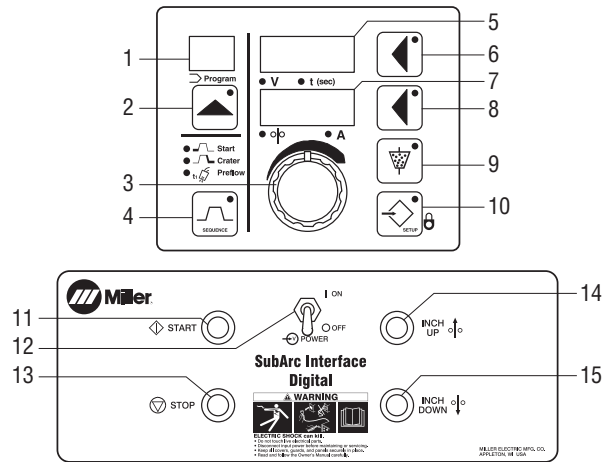
Model	Type of Input from Welding Power Source	Welding Power Source Type	Weld Voltage and Amperage Capacity	Dimensions	Net Weight
SubArc Interface Analog	Single-phase 24 VAC, 25 A, 50/60 Hz	Constant current (CC), constant voltage (CV), DC with remote contactor and output control capabilities	0–60 V 0–1500 A	H: 178 mm (7 in.) W: 286 mm (11.25 in.) D: 292 mm (11.5 in.)	8.2 kg (18 lb.)
SubArc Interface Digital	Single-phase 24 VAC, 25 A, 50/60 Hz	Constant voltage (CV), AC or DC, with remote contactor and output control capabilities	0–60 V 0–1500 A		

Certified by Canadian Standards Association to both the Canadian and U.S. Standards.
 Manufactured according to the Standard IEC-60974-1, -5, -10.

SubArc Interface Control Panels



SubArc Interface Analog



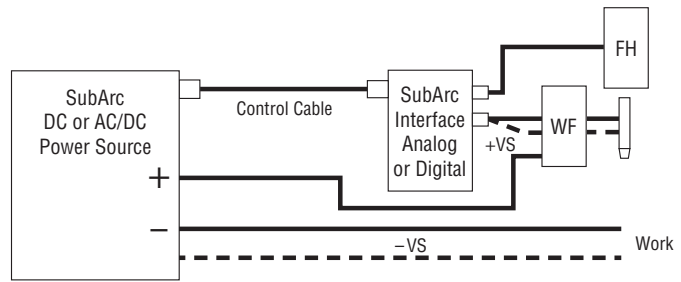
SubArc Interface Digital

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

- 1. Program Display
- 2. Program Push Button
- 3. Adjust Control
- 4. Sequence Push Button
- 5. Upper Display
- 6. Upper Display Push Button
- 7. Lower Display
- 8. Lower Display Push Button
- 9. Flux Push Button
- 10. Setup Push Button
- 11. Start Button
- 12. Power Switch
- 13. Stop Button
- 14. Wire Inch Up
- 15. Wire Inch Down

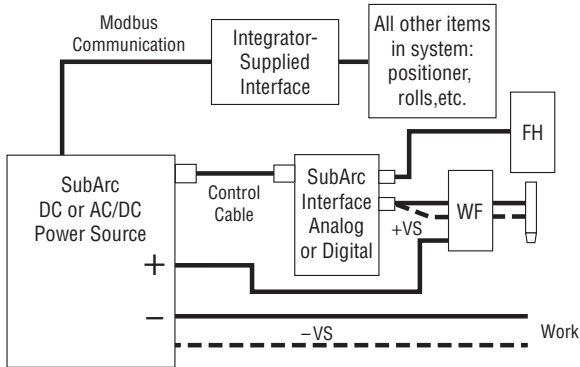
SubArc Interface Setup

In the new setup the positive sense lead is integrated in the wire feeder motor cable and control cable. A customer supplied negative sense lead is required for optimal performance.



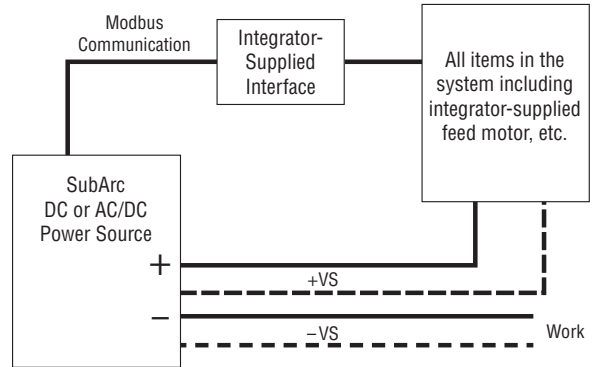
SubArc Modbus® Operation

Easy Method



Easy method of integrating standard components while controlling them over Modbus communication. Using the standard SubArc Interface, wire feed motor and flux hopper, the integrator can remotely adjust settings and operation of the SubArc Interface. Documentation is available.

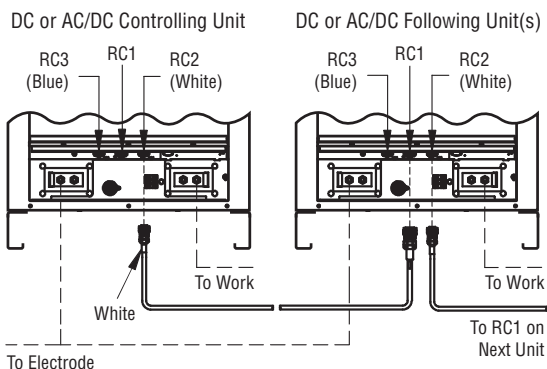
High-Level Method



High-level method where the integrator uses only the digital power sources and controls them over Modbus communication. Benefits from Miller technology-driven arc performance while integrating into a custom-made welding solution.

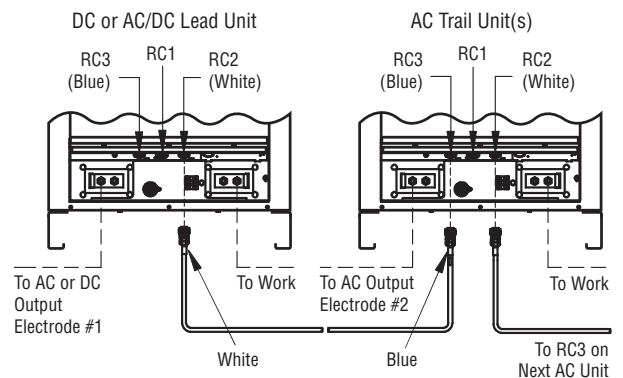
SubArc System Parallel and Tandem Configurations

Parallel Connections



Parallel setup. Only like power sources can be paralleled. Paralleling of two machines to increase maximum welding current is done by connecting the paralleling cable from RC2 on the first unit to RC1 on the second unit. This works for both DC as well as AC/DC machines. Daisy chaining multiple machines to achieve higher output is done in the same way. No special tools needed... plug and play.

Tandem Connections



Tandem setup. To use two or more AC arcs, the arc must be phase shifted to prevent arc to arc interaction. This is done by connecting the tandem cable from RC2 on the first unit to RC3 on the second unit. This automatically sets the optimum phase shift for AC welding. No special tools needed... plug and play.

Wire Drive Assemblies



SubArc Strip Drive 100 Digital Low Voltage #300 939

#300 940* With mounting bracket

Heavy-duty, right-angle wire drive assembly designed for automated strip clad applications.



SubArc Wire Drive 400 Digital Low Voltage

#300 938* Standard speed

#300 938 001 Standard speed, for use with Tractor

SubArc Wire Drive 780 Digital Low Voltage

#300 941* High speed

Right-angle wire drive assembly.

*Includes adapter plate allowing mounting to 63.5-, 108-, and 118-mm (2.5-, 4.25-, and 4.625-inch) bolt-hole patterns.

Wire Drive Assembly Specifications (Subject to change without notice.)

Model	Wire Feed Speed Range	Wire Diameter Range	Rating	Type of Input Power	Input Power Cord	Weight
SubArc Strip Drive 100 Digital Low Voltage	0.3–1.6 m/min. (10–69 IPM)	N/A (Strip cladding applications)	1/5 HP, 21 RPM	38 VDC	1.2 m (4 ft.)	9.1 kg (20 lb.)
SubArc Wire Drive 400 Digital Low Voltage	0.8–10.2 m/min. (30–400 IPM)	2.4–5.6 mm (3/32–7/32 in.)	1/5 HP, 85 RPM	38 VDC	1.2 m (4 ft.)	15 kg (33 lb.)
SubArc Wire Drive 400 Digital Low Voltage for Tractor						
SubArc Wire Drive 780 Digital Low Voltage	1.3–19.8 m/min. (50–780 IPM)	1.6–3.2 mm (1/16–1/8 in.)	1/4 HP, 143 RPM	38 VDC	1.2 m (4 ft.)	15 kg (33 lb.)

Accessories

Drive Rolls

“V” Knurled drive rolls for use with hard-shelled cored wires.

#132 955 1.6 mm (1/16 in.)

#132 960 2.0 mm (5/64 in.)

#132 961 2.4 mm (3/32 in.)

#132 962 2.8 mm (7/64 in.)

#132 963 3.2 mm (1/8 in.)

#193 700 4.0 mm (5/32 in.)

#193 701 4.8 mm (3/16 in.)

#193 702 5.6 mm (7/32 in.)



Cables

SubArc Control Cables

#260 622 030 9.1 m (30 ft.)

#260 622 050 15.2 m (50 ft.)

#260 622 080 24.4 m (80 ft.)

#260 622 100 30.5 m (100 ft.)

#260 622 120 36.6 m (120 ft.)

#260 622 200 61.0 m (200 ft.)

Cable between SubArc Interface and power source.

Motor Extension Cables

#254 232 010 3 m (10 ft.)

#254 232 025 7.6 m (25 ft.)

#254 232 065 19.8 m (65 ft.)

Cable between SubArc Interface and drive motor.

Flux Hopper Extension Cables

#260 623 010 3 m (10 ft.)

#260 623 025 7.6 m (25 ft.)

#260 623 065 19.8 m (65 ft.)

Cable between SubArc Interface and flux hopper.

SubArc Parallel Cable

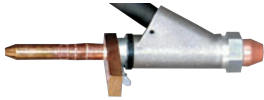
#260 775 015 4.6 m (15 ft.)

SubArc Tandem Cable

#260 878 015 4.6 m (15 ft.)

Accessories

Submerged Arc Torches



OBT 600 #043 923

600-amp, 100-percent-duty-cycle torch with concentric flux flow nozzle. Used with 1.6–5.6 mm (1/16–7/32 in.) wire.

OBT 600 Torch Body Extensions

- #043 967 25.4 mm (1 in.)
- #043 969 50.8 mm (2 in.)
- #043 973 101.6 mm (4 in.)
- #043 975 152.4 mm (6 in.)



OBT 1200 #043 900

1200-amp, 100-percent-duty-cycle torch with concentric flux flow nozzle. Used with 1.6–5.6 mm (1/16–7/32 in.) wire. OBT 1200 features a replaceable breakaway adapter to prevent costly damage.

OBT 1200 Torch Body Extension #043 981

Extension length is 215.9 mm (8.5 in.). Overall length with extension is 228.6 mm (9 in.).

OBT Torch Contact Tips

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



1200-Amp Single-Wire Torches

#301 141 Short, 288 mm (11.3 in.)
Used with 1.6–4.0 mm (1/16–5/32 in.) wires.

1200-Amp Single-Wire Torch Contact Tips

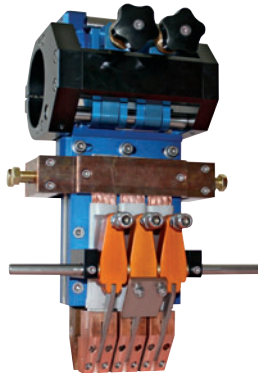
- #264 590 1.6 mm (1/16 in.)
- #264 591 2.0 mm (5/64 in.)
- #264 487 2.4 mm (3/32 in.)
- #264 593 3.2 mm (1/8 in.)
- #264 594 4.0 mm (5/32 in.)

1200-Amp Twin-Wire Torches

- #301 143 Short, 288 mm (11.3 in.)
 - #301 144 Long, 427 mm (16.8 in.)
- Used with 1.2–2.4 mm (3/64–3/32 in.) wires.

1200-Amp Twin-Wire Torch Contact Tips

- #264 595 1.2 mm (3/64 in.)
- #264 596 1.6 mm (1/16 in.)
- #264 597 2.0 mm (5/64 in.)
- #264 588 2.4 mm (3/32 in.)



Internal and External Cladding Heads

Our range of external Strip Cladding Heads are designed for both Electroslag and Submerged Arc strip cladding. Strip size can vary from 30 to 120 mm (1-3/16 to 4-3/4 in.). The internal Strip Cladding Heads are designed for Submerged Arc strip cladding. Strip size, 30 mm (1-3/16 in.).

Contact Miller for a full overview of welding torches and cladding heads.



SubArc Flux Hopper Digital Low Voltage #300 942

Flux hopper with automatic flux valve will carry 11.3 kg (25 lb.) of flux. Sized to allow hook-up of any flux-hopper-mounted recovery system. Slag screen is provided.

Includes 3.3 m (11-ft.) power cord.

Single-Wire Straightener #199 733

For use with SubArc Wire Drive 400 Digital Low Voltage or 780 Digital Low Voltage. For 1.6–5.6 mm (1/16–7/32 in.) wires.

Twin-Wire Straightener

- #301 160 Single adjustment
 - #301 162 Double/separate adjustment
- For Twin-Wire Torches only.



Wire Reel

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

Spool Support Assembly #119 438

For 27-kg (60 lb.) wire reel.

Light-Duty Cross Slide #195 411

Allows 152.4 mm (6 in.) of travel adjustment. Two units can be stacked to provide vertical and horizontal movement. **Not recommended for tandem.**

Heavy-Duty Cross Slide #300 482

25.4-mm (1 in.) diameter, precision, hardened and ground guide rods provide a perfect path for the sealed linear bushings, and smooth accurate movement of the weld head. Allows for 152.4 mm (6 in.) of travel adjustment and load capacity of 90.7 kg (200 lb.). **Recommended for tandem.**

Contact Miller for a full overview of powered or manual slides.



SubArc Tractor

- #300 945 Tractor only
 - #951 615 Analog Weld Control Package
 - #951 614 Digital Weld Control Package
- SubArc tractor packages include SubArc Tractor with remote start/stop control and guide rolls, SubArc Interface weld controller (analog or digital), SubArc Wire Drive 400 for Tractor, 11.3-kg (25 lb.) capacity flux hopper with valve, 27-kg (60 lb.) wire reel, OBT 600 torch and wire straightener

See Lit. No. AD/7.5 for more information.

Ordering Information

Equipment and Options	Stock No.	Description	Qty.	Price
SubArc DC 650 Digital	#907 622	230/460/575 V, 60 Hz		
SubArc DC 800 Digital (50 Hz)	#907 623	380/400/440 V, 50 Hz, CE		
SubArc DC 1000 Digital	#907 624	230/460/575 V, 60 Hz		
SubArc DC 1250 Digital (50 Hz)	#907 625	380/400/440 V, 50 Hz, CE		
SubArc AC/DC 1000 Digital	#907 620	460 V, 60 Hz		
	#951 618	575 V, 60 Hz with 575 V to 460 V step-down transformer		
SubArc AC/DC 1250 Digital (50 Hz)	#907 621	380/400 V, 50 Hz, CE		
Controls				
SubArc Interface Analog	#300 937	CC/CV, DC analog control		
SubArc Interface Digital	#300 936	CV, AC/DC digital control		
Drive Motors				
SubArc Strip Drive 100 Digital Low Voltage	#300 939	Heavy-duty, right-angle drive motor for automated strip clad applications		
	#300 940	Same as above with mounting bracket		
SubArc Wire Drive 400 Digital Low Voltage	#300 938	Standard-speed, right-angle drive assembly. Maximum speed 10 mpm (400 IPM)		
	#300 938 001	Same as above for use with Tractor		
SubArc Wire Drive 780 Digital Low Voltage	#300 941	High-speed, right-angle drive assembly. Maximum speed 19.8 mpm (780 IPM)		
Drive Rolls		See page 6		
Torches				
OBT 600	#043 923	600 amp, 100% duty cycle, air cooled		
OBT 600 Torch Body Extensions	#043 967	25.4 mm (1 in.)		
	#043 969	50.8 mm (2 in.)		
	#043 973	101.6 mm (4 in.)		
	#043 975	152.4 mm (6 in.)		
OBT 1200	#043 900	1200 amp, 100% duty cycle, air cooled		
OBT 1200 Torch Body Extension	#043 981	228.6 mm (9 in.)		
1200-Amp Single-Wire Torches	#301 141	Short, 288 mm (11.3 in.), 1200 amp		
1200-Amp Twin-Wire Torches	#301 143	Short, 288 mm (11.3 in.), 1200 amp		
	#301 144	Long, 427 mm (16.8 in.), 1200 amp		
Contact Tips		See page 7 for contact tips for all torches		
Internal and External Cladding Heads		Contact Miller		
Accessories				
SubArc Control Cables		See page 6		
Motor Extension Cables		See page 6		
Flux Hopper Extension Cables		See page 6		
SubArc Parallel Cable	#260 775 015	4.6 m (15 ft.)		
SubArc Tandem Cable	#260 878 015	4.6 m (15 ft.)		
SubArc Flux Hopper Digital Low Voltage	#300 942	11-kg (25 lb.) flux capacity		
Single-Wire Straightener	#199 733	For SubArc Wire Drive 400 Digital Low Voltage or 780 Digital Low Voltage		
Twin-Wire Straightener	#301 160	Single adjustment for Twin-Wire Torches only		
	#301 162	Double/separate adjustment for Twin-Wire Torches only		
Wire Reel	#108 008	For 27-kg (60 lb.) coil, requires Spool Support Assembly (#119 438)		
Spool Support Assembly	#119 438	Support for 27-kg (60 lb.) reels		
Light-Duty Cross Slide	#195 411	Provides 152.4-mm (6 in.) travel adjustment, load capacity of 68 kg (150 lb.)		
Heavy-Duty Cross Slide	#300 482	Provides 152.4-mm (6 in.) travel adjustment, load capacity of 90.7 kg (200 lb.)		
SubArc Tractor		See page 7		

Date:

Total Quoted Price:

Distributed by:

