

Syncrowave® 400

TIG/Stick Welding Power Source 

Quick Specs



Industrial Applications

Precision metal fabrication
Maintenance and repair
Light and heavy manufacturing
Shipbuilding
Tube and pipe
Automotive
Vocational

Processes

TIG (GTAW)
Stick (SMAW)
DC pulsed TIG (GTAW-P)

Input Power

208/240/480 V,
1-phase or 3-phase power

Amperage Range 5–400 A

Max. Open-Circuit Voltage 70 VDC

Rated Output 400 A at 26 V, 30% duty cycle
300 A at 22 V, 60% duty cycle

Net Weight

Machine only: 131 lb. (59.4 kg)
With Cooler and Running Gear: 211 lb. (95.7 kg)

Auto-Link® circuit automatically links the power source to primary voltage being applied (208/240/480 V, single- or three-phase).

Simple to install. Accepts either single- or three-phase input power.

Internal cooler power supply runs the Coolmate™ 3S off of the input power and requires no additional hook up.

Smaller footprint and lightweight design make it easier to install and maneuver.

Easy to use. Intuitive user interface is simple to understand making it easy to adjust parameters, and means less time training new employees and more time getting work done.

Pro-Set™ button gets to factory preset parameters with one touch of a button.

Energy efficient. Save on energy costs versus outdated welding equipment.

More stable arc and better arc starts versus outdated welding equipment.



AC TIG Features

Balance control provides adjustable oxide removal which is essential for creating the highest quality aluminum welds.

DC TIG Features

Pulse. Pulsing can increase puddle agitation, arc stability and travel speeds while reducing heat input and distortion.

DC Stick Features

DIG control allows the arc characteristics to be changed for specific applications and electrodes. Lower the DIG setting for smooth running electrodes like E7018 and increase the DIG setting for stiffer, more penetrating electrodes like E6010.

Hot Start™ adaptive control provides positive arc starts without sticking.



Power source is warranted for three years, parts and labor.



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Additional Features

Fan-On-Demand™ power source cooling system operates only when needed, reducing noise, energy use and the amount of contaminants pulled through the machine.

Wind Tunnel Technology™ protects internal electrical components from airborne contaminants, extending the product life.

Coolmate™ 3S cooler (Complete packages only). Three-gallon cooling system equipped with a visual flow indicator ensures that the coolant is flowing. An external coolant filter stops foreign objects from entering the water-cooled torch cable for better flow and longer life. Extended cooling capacity ensures maximum productivity. Three-year cooler warranty.

Arc timer/cycle counter records actual welding time and number of arc starts. Great for estimating job costs.

Welding aluminum? Oxides that form on aluminum melt at temperatures over 3,700 degrees Fahrenheit. The aluminum material that is located under this layer of oxide melts at 1,200 degrees Fahrenheit. The **AC squarewave welding current** of the Syncrowave 400 automatically removes the layer of oxide which is necessary for producing high-quality welds.

Do you have power fluctuations?

The Syncrowave 400 compensates for power fluctuation without changing your welding parameters. **Line voltage compensation** works on fluctuating power ± 10 percent.

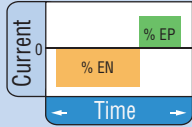
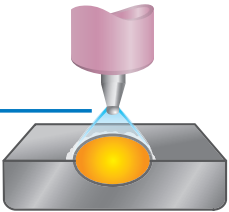
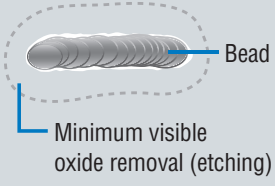
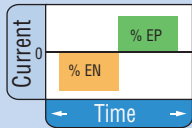
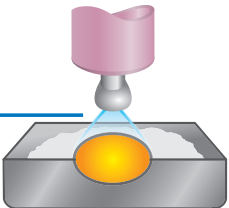
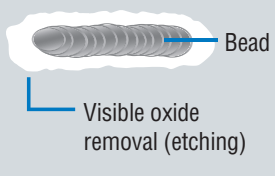
Easy-load cylinder rack minimizes cylinder lifting. Cylinder is not included.

Lift-Arc™ provides AC or DC arc initiation without the use of high frequency.

Blue Lightning™ high-frequency (HF) arc starter for non-contact arc initiation. Provides more consistent arc starts and greater reliability compared to traditional HF arc starters.

Auto-postflow adjusts the length of postflow time based on the amperage setting, shielding your tungsten and eliminating the need to set the postflow time.

AC Output: Balance Control

Feature	Setting	Arc Effect	Weld Effect
<p>AC Balance Control</p> <p>Controls arc cleaning action. Adjusting the % EN of the AC wave controls the width of the etching zone surrounding the weld.</p> <p><i>Note: Set the AC Balance control for adequate arc cleaning (etching) action at the sides and in front of the weld puddle. AC Balance should be fine-tuned according to the amount of etching desired.</i></p> <p>Balance range: Ball, 60–80% Pro-Set™ setting: 68%</p>	<p>75% EN</p> 	<p>Reduces balling action and helps maintain point</p> 	 <p>Minimum visible oxide removal (etching)</p>
	<p>60% EN</p> 	<p>Increases balling action of the electrode</p> 	 <p>Visible oxide removal (etching)</p>

Specifications (Subject to change without notice.)



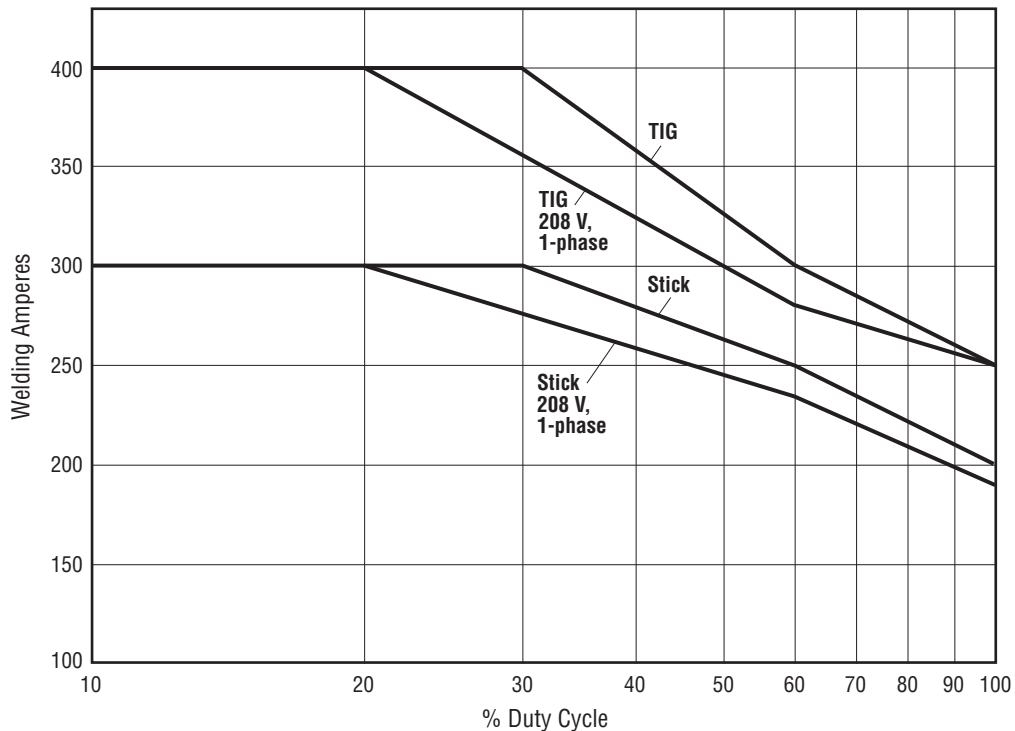
Welding Process	Input Power	Welding Amperage Range	Rated Output ²	Amps Input at Rated Load Output, 50/60 Hz					Max. Open-Circuit Voltage	Dimensions	Net Weight
				208 V	240 V	480 V	KVA	KW			
TIG ¹ (GTAW)	1-phase	5-400 A	400 A at 26 V, 30% duty cycle	77	65	31	15.4	14.2	70 VDC (13 VDC ³)	Power Source H: 29.4 in. (746 mm) W: 15 in. (381 mm) D: 24.6 in. (625 mm) With Cooler and Running Gear H: 43.9 in. (1114 mm) W: 20.5 in. (521 mm) D: 36.3 in. (921 mm)	Power Source 131 lb. (59.4 kg) With Cooler and Running Gear 211 lb. (95.7 kg)
	3-phase			40	36	17	14.5	13.8			
	1-phase	5-400 A	300 A at 22 V, 60% duty cycle	43	42	20	9.7	8.9			
	3-phase			25	23	11	9.1	8.8			
	1-phase	5-400 A	250 A at 20 V, 100% duty cycle	36	32	15	7.4	6.7			
	3-phase			19	18	9	6.9	6.6			
Stick (SMAW)	1-phase	5-300 A	300 A at 32 V, 30% duty cycle	64	54	26	13.1	12.0	70 VDC (13 VDC ³)		
	3-phase			34	30	15	12.3	11.8			
	1-phase	5-300 A	250 A at 30 V, 60% duty cycle	47	43	21	10.4	9.5			
	3-phase			27	24	12	9.8	9.4			
	1-phase	5-300 A	200 A at 28 V, 100% duty cycle	35	32	15	7.7	7.1			
	3-phase			20	18	9	7.4	7.0			

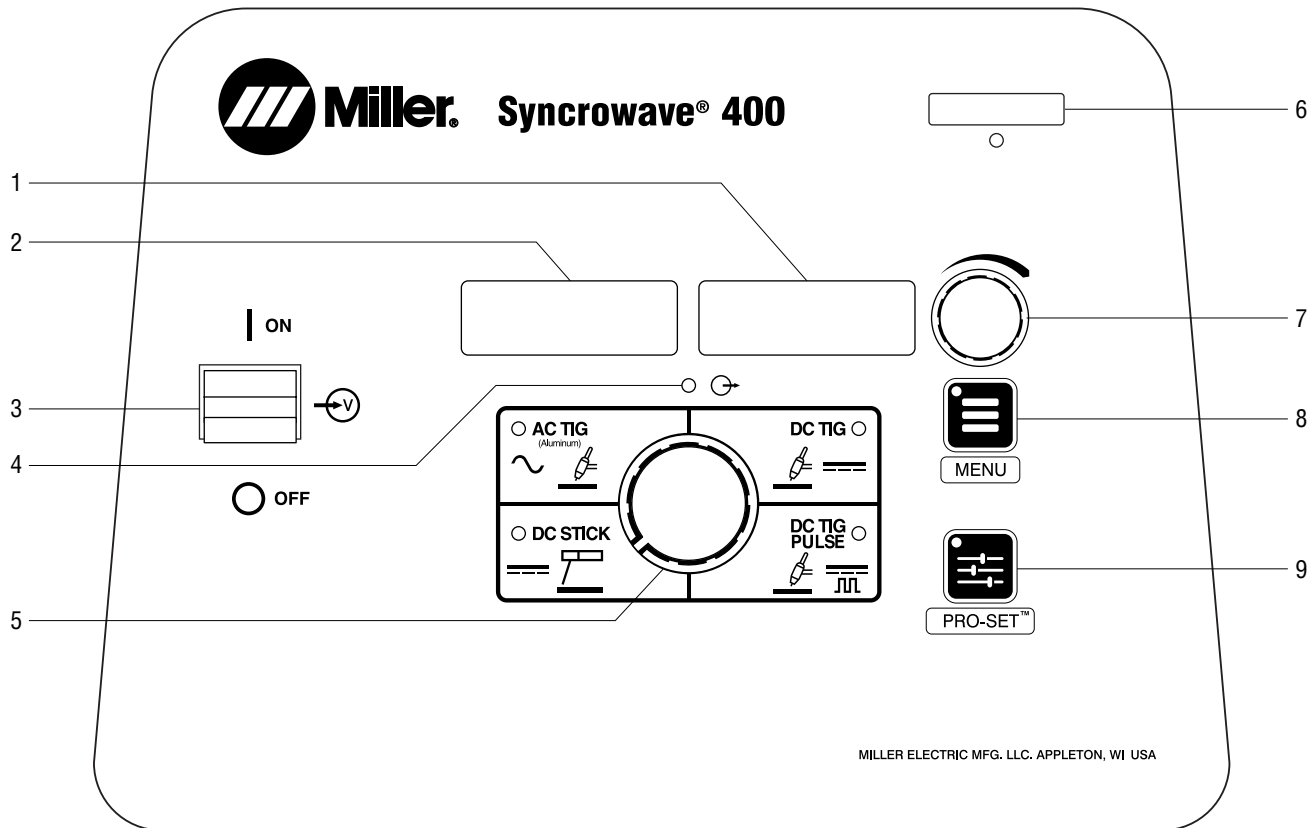
¹Includes cooler power draw. ²Refer to owner's manual for 208 V output rating and duty cycle. ³Indicates sense-voltage for Lift-Arc™ TIG and low OCV stick.

Certified by Canadian Standards Association to both the Canadian and U.S. Standards.

Performance Data

Duty Cycle Chart





MILLER ELECTRIC MFG. LLC. APPLETON, WI USA

1. Ammeter

Displays actual amperage while welding and preset amperage while idle. It is also used to display parameter selection options while in the menu.

2. Voltmeter

Displays actual rectified average voltage when voltage is present at the weld output terminals. It is also used to display parameter descriptions while in the menu.

3. Main Power Switch

Use switch to turn machine on or off.

4. Output ON Indicator

Blue indicator illuminates when output is on.

5. Process Selector

AC TIG — Used for welding aluminum.

DC TIG (DCEN) — Used for welding mild and stainless steel.

DC TIG Pulse (DCEN) — Used for welding mild and stainless steel.

DC Stick (DCEP) — Used for welding steels.

6. Memory Card Port and Indicator

This port is used to add features to the machine and update software to the boards within the machine. Indicator is lit while card is being accessed.

7. Amperage Adjustment Control

Use control to change preset amperage value. If a remote control is used, preset amperage value is the maximum amperage output available. This control also functions as a parameter change control while in the menu mode.

8. Menu Button

Press button to scroll through available parameters for the selected process. Hold button to enter setup mode.

9. Pro-Set™ Button

Press button to lock in all parameters to factory settings while LED is lit. Press and hold for five seconds to reset all parameters to factory settings. Meter display counts down.

Syncrowave® 400 Models/Packages

Machine only



Syncrowave 400 Machine Only

907783 (208/240/480 V)

Input power plug NOT included.

Syncrowave 400 Complete Package with wired foot control shown.



Syncrowave 400 Complete Packages

951831 (208/240/480 V)
with wired foot control

951832 (208/240/480 V)
with wireless foot control

Completely assembled. Includes Syncrowave, Coolmate™ 3S cooler, running gear, RFCS-14 HD remote foot control **OR** wireless remote foot control, four gallons of TIG coolant, and a water-cooled torch kit consisting of Weldcraft™ W-375 TIG torch, torch consumables kit, cable cover, flowmeter regulator, gas hose, torch connector, and work clamp with cable and Dinse-style connector.

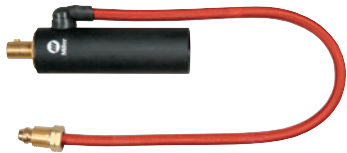
Input power plug NOT included.

Genuine Miller® Accessories

TIG Torch Kits and Connectors



W-375 Water-Cooled Torch Kit 301268
Kit comes with Weldcraft™ W-375 (WP-375) 25-foot (7.6 m) TIG torch with Dinse-style connector, torch cable cover, work clamp with 15-foot (4.6 m) cable and Dinse-style connector, flowmeter regulator with gas hose and AK4GL gas lens torch accessory kit.



Water-Cooled TIG Torch Connector 195377
50 mm Dinse-style with water return line. For use with all Weldcraft™ water-cooled torches.



Air-Cooled TIG Torch Connector 195379
Used to adapt a Weldcraft™ A-200 (WP-26) torch to a Dinse-style connector.

Remote Controls and Switches



Wireless Remote Foot Control 300429
For remote current and contactor control. Receiver plugs directly into the 14-pin receptacle of Miller machine. 90-foot (27.4 m) operating range.



Wireless Remote Hand Control 300430
For remote current and contactor control. Receiver plugs directly into the 14-pin receptacle of Miller machine. 300-foot (91.4 m) operating range.



RFCS-14 HD Foot Control 194744
Maximum flexibility is accomplished with a reconfigurable cord that can exit the front, back or either side of the pedal. Foot pedal provides remote current and contactor control. Includes 20-foot (6 m) cord and 14-pin plug.



RHC-14 Hand Control 242211020
Miniature hand control for remote current and contactor control. Dimensions: 4 x 4 x 3.25 inches (102 x 102 x 83 mm). Includes 20-foot (6 m) cord and 14-pin plug.



RCCS-14 Remote Contactor and Current Control 043688
North/south rotary-motion fingertip control attaches to TIG torch using two hook-and-loop fasteners. Includes 26.5-foot (8 m) cord and 14-pin plug.



RCC-14 Remote Contactor and Current Control 151086
East/west rotary-motion fingertip control attaches to TIG torch using two hook-and-loop fasteners. Includes 26.5-foot (8 m) cord and 14-pin plug.



RMLS-14 Switch 129337
Momentary- and maintained-contact rocker switch for contactor control. Push forward for maintained contact and backward for momentary contact. Includes 26.5-foot (8 m) cord and 14-pin plug.



RMS-14 On/Off Control 187208
Momentary-contact switch for contactor control. Rubber-covered pushbutton dome switch ideal for repetitive on-off applications. Includes 26.5-foot (8 m) cord and 14-pin plug.

Extension Cables for 14-Pin Remote Controls
242208025 25 ft. (7.6 m)
242208050 50 ft. (15.2 m)
242208080 80 ft. (24.4 m)

Genuine Miller® Accessories (continued)

Coolant



Low-Conductivity Coolant 043810

Sold in cases of four one-gallon recyclable plastic bottles. Miller coolants contain a base of ethylene glycol and deionized water to protect against freezing to -37 degrees Fahrenheit (-38°C) or boiling to 227 degrees Fahrenheit (108°C). Also contains a compound that resists algae growth.

TIG Welding Gloves



Performance TIG Gloves

263346 Small

263347 Medium

263348 Large

263349 X-Large

Completely unlined, goat grain leather with triple-padded palm.

Educational Materials

Gas Tungsten Arc Welding (TIG) Publication
250833

Tungsten

Tungsten	Amp Range	2% Ceriated (AC/DC)	2% Lanthanated (AC/DC)
1/16 in. (1.6 mm)	70–150 A	WC116X7	WL2116X7
3/32 in. (2.4 mm)	140–250 A	WC332X7	WL2332X7
1/8 in. (3.2 mm)	225–400 A	WC018X7	WL2018X7
5/32 in. (4.0 mm)	300–500 A	WC532X7	WL2532X7

Ordering Information

Equipment and Options	Stock No.	Description	Qty.	Price
Syncrowave® 400	907783	208/240/480 V, 50/60 Hz		
Syncrowave® 400 Complete with Wired Foot Control	951831	208/240/480 V, 50/60 Hz		
Syncrowave® 400 Complete with Wireless Foot Control	951832	208/240/480 V, 50/60 Hz		
TIG Torch Kits and Connectors				
W-375 Water-Cooled Torch Kit	301268	See page 6 for contents		
Water-Cooled TIG Torch Connector	195377	Connects Weldcraft™ water-cooled torches to Dinse-style connector		
Air-Cooled TIG Torch Connector	195379	Connects Weldcraft™ A-200 (WP-26) torch to Dinse-style connector		
Tungsten		See page 7		
Remote Controls				
Wireless Remote Foot Control	300429	Foot control with wireless 90 ft. (27.4 m) operating range		
Wireless Remote Hand Control	300430	Hand control with wireless 300 ft. (91.4 m) operating range		
RFCS-14 HD	194744	Heavy-duty foot control		
RHC-14	242211020	Hand control		
RCCS-14	043688	North/south fingertip control		
RCC-14	151086	East/west fingertip control		
RMLS-14	129337	Momentary/maintained rocker switch		
RMS-14	187208	Momentary rubber dome switch		
Extension Cables		See page 6		
Accessories				
TIG Coolant (Must be ordered in quantities of four)	043810	1-gallon plastic bottle. Protects against freezing to -37° Fahrenheit (-38°C) or boiling to 227° Fahrenheit (108°C)		
TIG Welding Gloves		See page 7		
Cable Connectors		<i>Supplied with power source and torch kits</i>		
Dinse-Style Connector 50 mm (1 male)	042418	Used to connect weld lead to Dinse terminal machine		
Dinse-Style Connector 50 mm (1 male, 1 female)	042419	Used to extend weld cables		
Dinse/Tweco® Adapter	042465	Male Dinse-style to female Tweco		
Dinse/Cam-Lok Adapter	042466	Male Dinse-style to female Cam-Lok		
Gas Tungsten Arc Welding (TIG) Publication	250833			

Date:

Total Quoted Price:

Distributed by:



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