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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,
3-phase or 1-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, three- or single-phase).

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

Small footprint and lightweight design make it easy 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™ eliminates the guesswork when setting weld parameters.

Energy efficient. Save up to 33 percent on energy costs versus outdated welding equipment.

Line voltage compensation keeps power source constant regardless of fluctuations in input power (±10 percent).

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

Machine only

Complete package

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

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

Blue Lightning™ provides more consistent high-frequency (HF) arc starts and greater reliability compared to traditional arc starters.

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

More stable arc and better arc starts versus outdated welding equipment.

AC squarewave welding current automatically removes the layer of oxide that forms when welding on aluminum, helping to produce high-quality welds.

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.

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

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

Coolmate™ **3S cooler** (Complete packages only). Three-gallon cooling system features a flow indicator to visually indicate system is working and an external filter to stop objects from entering the water-cooled torch cable for better flow and longer life. Extended cooling capacity ensures maximum productivity. One-year cooler warranty.

TRUE BLUE® 3YR. WARRANTY

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

Miller Electric Mfg. LLC
An ITW Welding Company
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Appleton, WI 54912-1079 USA

Equipment Sales US and Canada
Phone: 866-931-9730
FAX: 800-637-2315
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International FAX: 920-735-4125

MillerWelds.com

Weld Process Features

AC TIG

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

Frequency controls the width of the arc cone and can improve directional control of the arc.

DC TIG

Exceptionally smooth and precise arc for welding exotic materials.

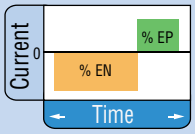
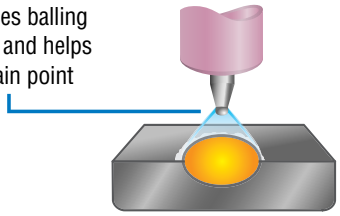
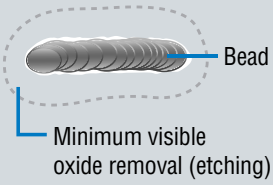
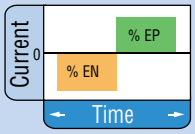
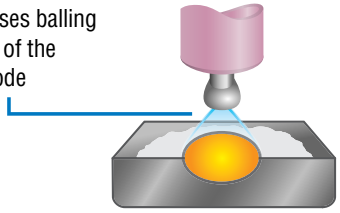
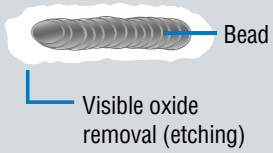
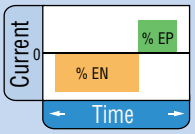
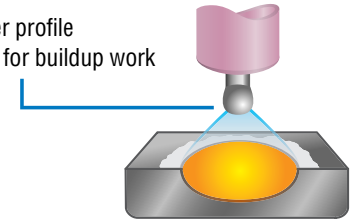
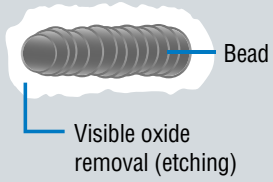
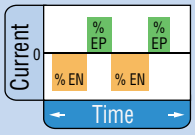
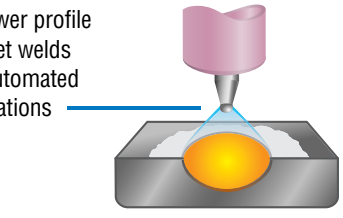
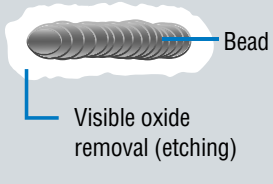
Pulse. Pulsing can increase puddle agitation, arc stability and travel speeds while reducing heat input and distortion.

DC Stick

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.

AC Output: Balance and Frequency Control

Feature	Setting	Arc Effect	Weld Effect
AC Balance Control Controls arc cleaning action. Adjusting the % EN of the AC wave controls the width of the etching zone surrounding the weld. *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.* Balance range: Ball, 60–80% Pro-Set™ setting: 68%	75% EN 	Reduces balling action and helps maintain point 	
	50% EN 	Increases balling action of the electrode 	
AC Frequency Control Controls the width of the arc cone. Increasing the AC Frequency provides a more focused arc and increased directional control. *Note: Decreasing the AC Frequency softens the arc and broadens the weld puddle for a wider weld.* Frequency range: 50–150 Hz Pro-Set™ setting: 70 Hz	60 Hz 	Wider profile ideal for buildup work 	
	120 Hz 	Narrower profile for fillet welds and automated applications 	

Specifications (Subject to change without notice.)

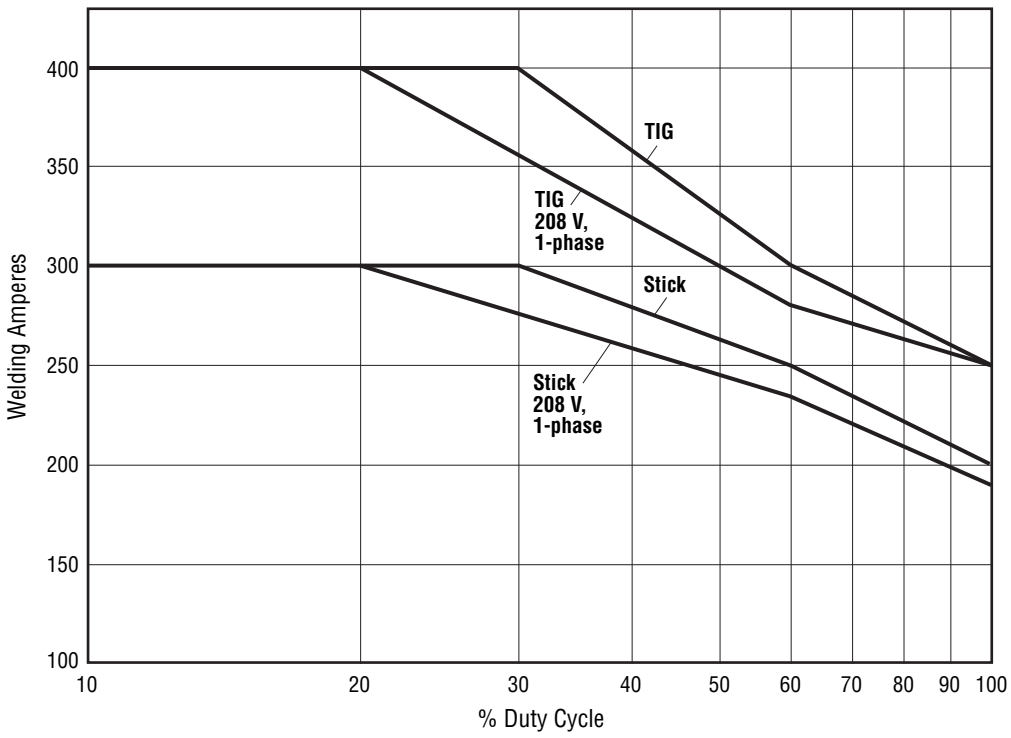
Welding Process	Input Power	Welding Amperage Range	Rated Output[2]	Amps Input at Rated Load Output, 50/60 Hz 208 V	240 V	480 V	KVA	KW	Max. Open-Circuit Voltage	Dimensions	Net Weight
TIG[1] (GTAW)	3-phase	5–400 A	400 A at 26 V, 30% duty cycle	40	36	17	14.5	13.8	70 VDC (13 VDC[3])	**Power Source** H: 29.4 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)
	1-phase			77	65	31	15.4	14.2			
	3-phase	5–400 A	300 A at 22 V, 60% duty cycle	25	23	11	9.1	8.8			
	1-phase			43	42	20	9.7	8.9			
	3-phase	5–400 A	250 A at 20 V, 100% duty cycle	19	18	9	6.9	6.6			
	1-phase			36	32	15	7.4	6.7			
Stick (SMAW)	3-phase	5–300 A	300 A at 32 V, 30% duty cycle	34	30	15	12.3	11.8	70 VDC (13 VDC[3])		
	1-phase			64	54	26	13.1	12.0			
	3-phase	5–300 A	250 A at 30 V, 60% duty cycle	27	24	12	9.8	9.4			
	1-phase			47	43	21	10.4	9.5			
	3-phase	5–300 A	200 A at 28 V, 100% duty cycle	20	18	9	7.4	7.0			
	1-phase			35	32	15	7.7	7.1			

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

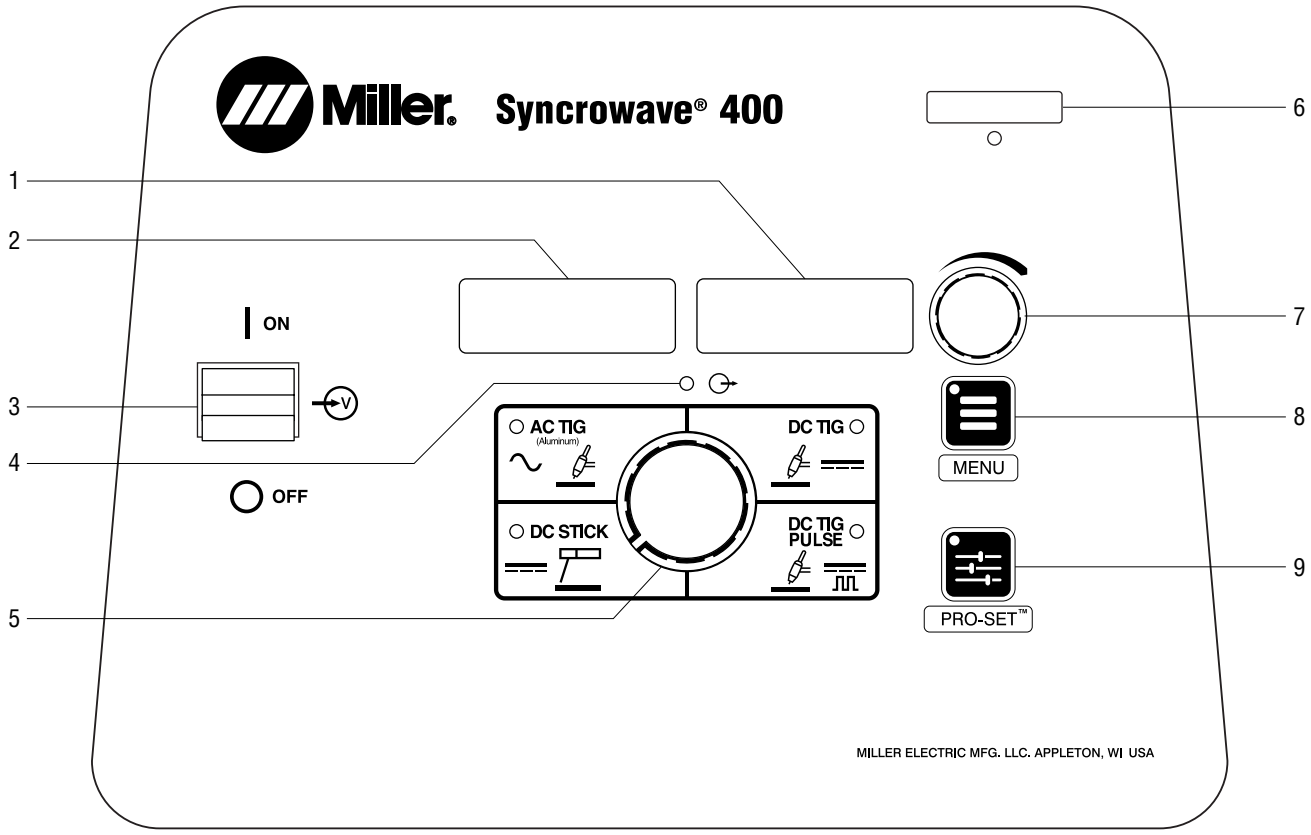
Certified by Canadian Standards Association to both the Canadian and U.S. Standards.

Performance Data

Duty Cycle Chart



Control Panel



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.

TIGRunner®

Syncrowave 400 TIGRunner package

907783001 (208/240/480 V)

Completely assembled. Includes Syncrowave, Coolmate™ 3S cooler, and running gear.

Input power plug NOT included.

Syncrowave 400 Complete
Package with wired foot control shown.

Syncrowave 400 Complete packages

951000004 (208/240/480 V) with wired foot control
951873 (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, AK4GL gas lens torch accessory 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

Running Gear/Cylinder Rack

Syncrowave 300/400 4-Wheel Cart 301601
For Syncrowave 300/400 (machine only). Cart includes storage space with latching door, handles, cylinder rack with chain, foot control holster, and cooler adapter kit. Allows for the addition of a Coolmate™ 3 externally powered cooler if desired.

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 301580
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 301582
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 301589
Heavy-duty foot pedal current and contactor control provides increased stability and durability from larger base and heavier cord. Includes 20-foot (6 m) cord with 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
Must be ordered in quantities of four. One-gallon recyclable plastic bottle. Miller coolants contains a base of ethylene glycol and deionized water to protect against freezing to -37° Fahrenheit (-38°C) or boiling to 227° Fahrenheit (108°C).

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

To order, please call Miller Literature at 866-931-9732 or visit MillerWelds.com/resources/tools.

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**	Machine only. 208/240/480 V, 50/60 Hz		
Syncrowave® 400 TIGRunner®	**907783001**	208/240/480 V, 50/60 Hz		
Syncrowave® 400 Complete with Wired Foot Control	**951000004**	208/240/480 V, 50/60 Hz		
Syncrowave® 400 Complete with Wireless Foot Control	**951873**	208/240/480 V, 50/60 Hz		
Running Gear/Cylinder Rack				
Syncrowave 300/400 4-Wheel Cart	**301601**	For Syncrowave 300 and 400 with or without Coolmate 3		
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		
Remote Controls				
Wireless Remote Foot Control	**301580**	Foot control with wireless 90 ft. (27.4 m) operating range		
Wireless Remote Hand Control	**301582**	Hand control with wireless 300 ft. (91.4 m) operating range		
RFCS-14 HD	**301589**	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		
Gas Tungsten Arc Welding (TIG) Publication	**250833**			
Tungsten		See page 7		
Cable Connectors and Adapters				
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		
Educational Materials		See page 7		

Date: **Total Quoted Price:**

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