

# Syncrowave® 400

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TIG/Stick Welding  
Power Source 

## Quick Specs



### Industrial Applications

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

### Processes

AC/DC TIG (GTAW)  
DC TIG (GTAW)  
Pulsed DC TIG (GTAW-P)  
Stick (SMAW)

### Input Power

380/400 V  
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:** 59.4 kg (131 lb.)

**With Cooler and Running Gear:** 95.7 kg (211 lb.)

**NEW!**

## The Syncrowave AC/DC TIG machine

has been designed for ease of use without compromising on the weld performance. The machine can be set for AC TIG, DC TIG or MMA in no time. The simple and clean control panel reduces the set up time and improves productivity.

### Mechanical features

**Fully integrated system** where the cooling unit runs off the power source and forms a robust and sturdy system with the integrated running gear. The machine is easy to manoeuvre and easy to position at the weld station.

**Accessibility.** All interaction points with the machine and cooler can be found on the front panels. Turn the machine on from the control panel, check the flow of cooling liquid and top up if necessary, without having to move the machine and without having to access difficult to reach areas.

**Comfort and ergonomics.** The control panel of the Syncrowave is positioned at the perfect height. Easy to access all the settings without having to kneel by the machine.



### Weld performance features

**Easy to use.** The control panel is giving you access only to the relevant settings for the process you have selected. This keeps the panel clean and simple to understand, making it easy to adjust parameters, and means less time training new employees and more time getting work done.

**Pro-Set™** is a unique feature on the Miller® Syncrowave. By one touch of a button, the machine reverts to the factory pre-set parameters which will get you started in no time. Simply set the welding amperage and Go.

**Perfect arc starts with Blue Lightning™.** By selecting the tungsten diameter, you are using, the machine will pre-set a number of critical arc start parameters. This ensure accurate and reliable arc starts every time.

**Arc stability.** The Miller brand is synonymous with world class TIG arc stability and performance. The Syncrowave is no exception. Enjoy full control of the arc and the weld puddle.

### 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

11 liters 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 2000°C (3,700°F) The aluminum material that is located under this layer of oxide melts at 649°C (1,200°F) 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  $\pm 10$  percent.

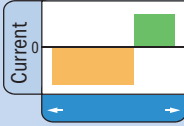
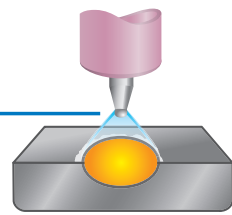
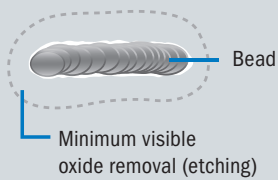
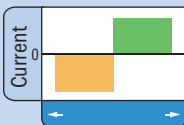
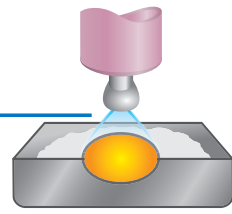
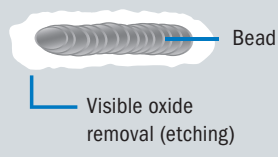
**Easy-load cylinder rack** minimizes cylinder lifting. Cylinder is not included.

**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><b>AC Balance Control</b></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>

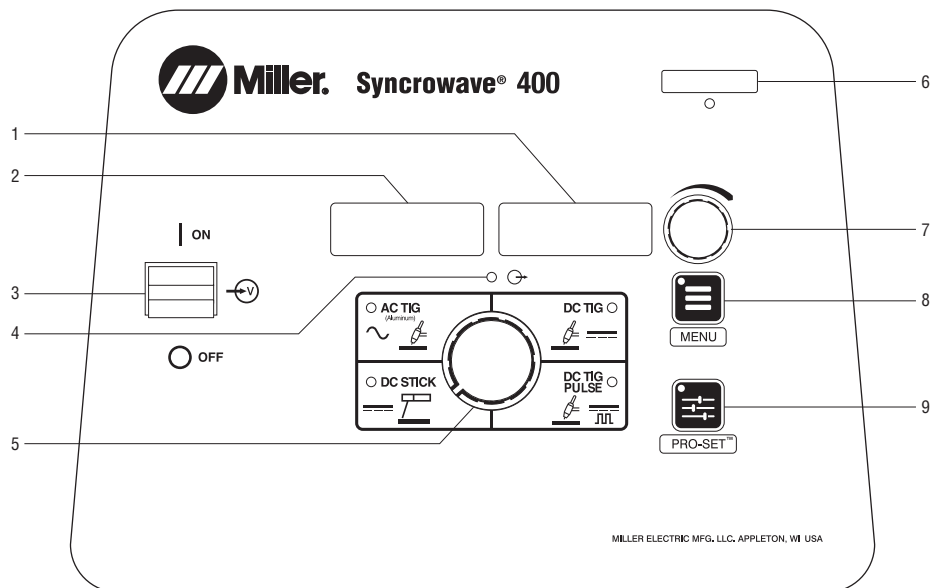
# Specifications (Subject to change without notice.)



Welding Process	Input Power	Welding Amperage Range	Rated Output	Amps Input at Rated Load Output, 50/60 Hz				Max. Open-Circuit Voltage	Dimensions	Net Weight
				380V	400V	kVA	kW			
TIG* (GTAW)	3-phase	5 - 400 A	400 A at 26 V, 30% duty cycle	21.5	19.4	14.1	13.7	70 VDC (13 VDC**)	<b>Power Source</b> H: 746 mm (29.4 in.) W: 381 mm (15 in.) D: 625 mm (24.6 in.)  <b>With Cooler and Running Gear</b> H: 1114 mm (43.9 in.) W: 521 mm (20.5 in.) D: 921 mm (36.3 in.)	<b>Power Source</b> 59.4 kg (131 lb.)  <b>With Cooler and Running Gear</b> 95.7 kg (211 lb.)
	3-phase	5 - 400 A	300 A at 22 V, 60% duty cycle	13.7	12.4	9.0	8.8			
	3-phase	5 - 400 A	250 A at 20 V, 100% duty cycle	10.5	9.4	6.9	6.7			
Stick (SMAW)	3-phase	5 - 300 A	300 A at 32 V, 30% duty cycle	17.8	16.8	11.7	11.2	70 VDC (13 VDC**)		
	3-phase	5 - 300 A	250 A at 30 V, 60% duty cycle	14.7	13.3	9.7	9.3			
	3-phase	5 - 300 A	200 A at 28 V, 100% duty cycle	11.1	10.1	7.3	7.0			

\*Includes cooler power draw. \*\*Indicates sense-voltage for Lift-Arc™ TIG and low OCV stick.

## 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 aluminium.

**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.

## TIG Torch Kits and Connectors

The Miller TIG torches have been designed to perfectly match and to ensure that the welder can fully benefit from the superior arc quality of the Miller Syncrowave®. The material has been carefully selected to prevent ageing and leakage in the hoses and cables. Miller uses more copper in the power cable to minimize the heat losses and maximize the output.

The TIG torches can be configured with a standard torch head or a flexible alternative. The ergonomic handle can also be fitted with a remote control for adjustment of the weld current at the point of welding.

The torches come equipped with a 2.4 mm Miller®|Weldcraft® 2% lanthanated tungsten electrode.

The blue electrode ensures a stable arc in both AC and DC processes, with greater longevity than conventional tungsten electrodes, the ability to use a smaller-diameter electrode for the same job, use of a higher current for a similar-sized electrode, and less tungsten spitting.



*\*Remote current control from the thumb wheel, available as an option on all models*

Torch	Stock No.	Technical description	DC current	AC current
350 A water cooled 4 meter	<b>058022001</b>	50 mm <sup>2</sup> Dinse, 5/8" gas, Water quick connect, 14 pin control	350A @ 100%	250A @ 100%
350 A water cooled 4 meter, Remote*	<b>058022002</b>	50 mm <sup>2</sup> Dinse, 5/8" gas, Water quick connect, 14 pin control	350A @ 100%	250A @ 100%
350 A water cooled 8 meter	<b>058022003</b>	50 mm <sup>2</sup> Dinse, 5/8" gas, Water quick connect, 14 pin control	350A @ 100%	250A @ 100%
350 A water cooled 8 meter, Remote*	<b>058022004</b>	50 mm <sup>2</sup> Dinse, 5/8" gas, Water quick connect, 14 pin control	350A @ 100%	250A @ 100%
270 A water cooled 4 meter	<b>058022005</b>	50 mm <sup>2</sup> Dinse, 5/8" gas, Water quick connect, 14 pin control	270A @ 100%	190A @ 100%
250 A water cooled 4 meter, Flex	<b>058022006</b>	50 mm <sup>2</sup> Dinse, 5/8" gas, Water quick connect, 14 pin control	250A @ 100%	175A @ 100%
270 A water cooled 8 meter	<b>058022007</b>	50 mm <sup>2</sup> Dinse, 5/8" gas, Water quick connect, 14 pin control	270A @ 100%	190A @ 100%
250 A water cooled 8 meter, Flex	<b>058022008</b>	50 mm <sup>2</sup> Dinse, 5/8" gas, Water quick connect, 14 pin control	250A @ 100%	175A @ 100%
270 A water cooled 4 meter, Remote*	<b>058022009</b>	50 mm <sup>2</sup> Dinse, 5/8" gas, Water quick connect, 14 pin control	270A @ 100%	190A @ 100%
250 A water cooled 4 meter, Flex, Remote*	<b>058022010</b>	50 mm <sup>2</sup> Dinse, 5/8" gas, Water quick connect, 14 pin control	250A @ 100%	175A @ 100%
270 A water cooled 8 meter, Remote	<b>058022011</b>	50 mm <sup>2</sup> Dinse, 5/8" gas, Water quick connect, 14 pin control	270A @ 100%	190A @ 100%
250 A water cooled 8 meter, Flex, Remote*	<b>058022012</b>	50 mm <sup>2</sup> Dinse, 5/8" gas, Water quick connect, 14 pin control	250A @ 100%	175A @ 100%
200 A air cooled 4 meter	<b>058022013</b>	50 mm <sup>2</sup> Dinse, 5/8" gas, 14 pin control	200A @ 60%	150A @ 60%
200 A air cooled 4 meter, Flex	<b>058022014</b>	50 mm <sup>2</sup> Dinse, 5/8" gas, 14 pin control	200A @ 60%	150A @ 60%
200 A air cooled 8 meter	<b>058022015</b>	50 mm <sup>2</sup> Dinse, 5/8" gas, 14 pin control	200A @ 60%	150A @ 60%
200 A air cooled 8 meter, Flex	<b>058022016</b>	50 mm <sup>2</sup> Dinse, 5/8" gas, 14 pin control	200A @ 60%	150A @ 60%
200 A air cooled 4 meter, Remote*	<b>058022017</b>	50 mm <sup>2</sup> Dinse, 5/8" gas, 14 pin control	200A @ 60%	150A @ 60%
200 A air cooled 4 meter, Flex, Remote*	<b>058022018</b>	50 mm <sup>2</sup> Dinse, 5/8" gas, 14 pin control	200A @ 60%	150A @ 60%
200 A air cooled 8 meter, Remote*	<b>058022019</b>	50 mm <sup>2</sup> Dinse, 5/8" gas, 14 pin control	200A @ 60%	150A @ 60%
200 A air cooled 8 meter, Flex, Remote*	<b>058022020</b>	50 mm <sup>2</sup> Dinse, 5/8" gas, 14 pin control	200A @ 60%	150A @ 60%

# Tungsten

2% Ceriated (EWCe-2)		
Type	Ø mm (in.)	Stock No.
Performs well in DC welding and arc starting at low current settings and offers excellent performance in AC Processes.	1.6 (1/16")	WC116X7
	2.4 (3/32")	WC332X7
	3.2 (1/8")	WC018X7
	4.0 (5/32")	WC532X7



2% Lanthanated (EWLa-2)		
Type	Ø mm (in.)	Stock No.
Provides excellent arc starting, arc stability and re-ignition and less tip erosion in AC or DC welding. Can substitute for 2% Thoriated.	1.6 (1/16")	WL2116X7
	2.4 (3/32")	WL2332X7
	3.2 (1/8")	WL2018X7
	4.0 (5/32")	WL2532X7



Rare Earth (EWG)		
Type	Ø mm (in.)	Stock No.
Combines the best of all alloying elements and provides excellent arc stability in AC or DC welding.	1.6 (1/16")	WG116X7
	2.4 (3/32")	WG332X7
	3.2 (1/8")	WG018X7



## Genuine Miller® Accessories

### Remote Controls



**Wireless Remote Foot Control 301580**  
For remote current and contactor control. Receiver plugs directly into the 14-pin receptacle of Miller machine. 27.4 m (90 ft.) operating range.



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



**Wireless Remote Hand Control 301582**  
For remote current and contactor control. Receiver plugs directly into the 14-pin receptacle of Miller machine. 91.4 m (300 ft.) operating range.



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

### Coolant



**Low-Conductivity Coolant 043810**  
Sold in 3.8 liter recyclable plastic bottles. Miller coolants contain a base of ethylene glycol and deionized water to protect against freezing to -38°C (-37°F) or boiling to 108°C (227°F). Also contains a compound that resists algae growth.

### TIG Welding Gloves



**Miller® TIG Welding Gloves**  
**758081006** size 8  
**758081007** size 9  
**758081008** size 10  
**758081009** size 11  
**758081010** size 12  
 Completely unlined, goat grain leather, with the upper hand and cuff in cow split.



**Miller® TIG Pro Welding Gloves**  
**758081001** size 8  
**758081002** size 9  
**758081003** size 10  
**758081004** size 11  
**758081005** size 12  
 Completely unlined, goat grain leather, with the cuff in cow split.

## Ordering Information

Equipment and Options	Stock No.	Description	Qty.	Price
<b>Syncrowave® 400 AC/DC TIG Runner</b>	<b>907783003</b>	400 V, 50/60 Hz, incl. power source, water cooler and running gear		
<b>Syncrowave® 400 AC/DC Machine Only</b>	<b>907783002</b>	400 V, 50/60 Hz		
<b>Torches</b>		See page 4		
<b>Tungsten</b>		See page 5		
<b>Cable Kits</b>				
Return cable kit	<b>057014335</b>	300 A 50 mm <sup>2</sup> , 5 m		
Return cable kit	<b>057014340</b>	400 A 70 mm <sup>2</sup> , 5 m		
Electrode holder kit	<b>057014354</b>	300 A 50 mm <sup>2</sup> , 5 m		
Electrode holder kit	<b>057014360</b>	400 A 70 mm <sup>2</sup> , 5 m		
<b>Remote Controls</b>				
RHC-14 Hand control	<b>242211020</b>	Hand control with 6 m (20 ft.) cord		
RFCS-14 Heavy duty remote foot pedal	<b>194744</b>	Heavy duty remote foot pedal		
Wireless remote foot pedal	<b>301580</b>	Max 27 m (90 ft.)		
WRHC Wireless remote hand control	<b>301582</b>	Wireless hand remote max 91 m (300 ft.)		
<b>Accessories</b>				
Coolant 3.8 l	<b>043810</b>	3.8 l (1-gallon) plastic bottle. Protects against freezing to -38°C (-37°F) or boiling to 108°C (227°F)		

Date:

Total Quoted Price:

Miller recommends *Elega* consumables

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