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)

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

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

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 Save on energy costs versus outdated welding equipment.

More stable arc and better arc starts versus outdated welding equipment.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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Appleton, WI 54912-1079 USA

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FAX: 800-637-2315
International Phone: 920-735-4554
International FAX: 920-735-4125

MillerWelds.com
**AC Output: Balance Control**

**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%

### Feature | Setting | Arc Effect | Weld Effect
--- | --- | --- | ---
**AC Balance Control** | 75% EN | Reduces balling action and helps maintain point | Bead
| | | Minimum visible oxide removal (etching) | |
| | 60% EN | Increases balling action of the electrode | Bead
| | | Visible oxide removal (etching) | |

**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.

**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.

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

**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.

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**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.
### Specifications (Subject to change without notice.)

<table>
<thead>
<tr>
<th>Welding Process</th>
<th>Input Power</th>
<th>Welding Amperage Range</th>
<th>Rated Output</th>
<th>Amps Input at Rated Load Output, 50/60 Hz</th>
<th>Max. Open-Circuit Voltage</th>
<th>Dimensions</th>
<th>Net Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIG (GTAW)</td>
<td>1-phase</td>
<td>5–400 A</td>
<td>400 A at 26 V, 30% duty cycle</td>
<td>77 65 31 15.4 14.2</td>
<td>70 VDC (13 VDC)²</td>
<td>H: 29.4 in. (746 mm) W: 15 in. (381 mm) D: 24.6 in. (625 mm)</td>
<td>Power Source: 131 lb. (59.4 kg)</td>
</tr>
<tr>
<td></td>
<td>3-phase</td>
<td></td>
<td>400 A at 26 V, 30% duty cycle</td>
<td>14.2</td>
<td></td>
<td>With Cooler and Running Gear: 211 lb. (95.7 kg)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1-phase</td>
<td>5–400 A</td>
<td>300 A at 22 V, 60% duty cycle</td>
<td>43 42 20 9.7 8.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3-phase</td>
<td></td>
<td>300 A at 22 V, 60% duty cycle</td>
<td>9.8 8.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1-phase</td>
<td>5–400 A</td>
<td>250 A at 20 V, 100% duty cycle</td>
<td>36 32 15 7.4 6.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3-phase</td>
<td></td>
<td>250 A at 20 V, 100% duty cycle</td>
<td>6.8 6.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stick (SMAW)</td>
<td>1-phase</td>
<td>5–300 A</td>
<td>300 A at 32 V, 30% duty cycle</td>
<td>64 54 26 13.1 12.0</td>
<td>70 VDC (13 VDC)²</td>
<td>Power Source: 131 lb. (59.4 kg)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3-phase</td>
<td></td>
<td>300 A at 32 V, 30% duty cycle</td>
<td>12.11.8</td>
<td></td>
<td>With Cooler and Running Gear: 211 lb. (95.7 kg)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1-phase</td>
<td>5–300 A</td>
<td>250 A at 30 V, 60% duty cycle</td>
<td>47 43 21 10.4 9.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3-phase</td>
<td></td>
<td>250 A at 30 V, 60% duty cycle</td>
<td>9.8 9.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1-phase</td>
<td>5–300 A</td>
<td>200 A at 28 V, 100% duty cycle</td>
<td>35 32 15 7.7 7.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3-phase</td>
<td></td>
<td>200 A at 28 V, 100% duty cycle</td>
<td>7.4 7.0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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](chart_url)

The chart above illustrates the duty cycle performance of the welding equipment, showing the relationship between welding amperes and duty cycle for TIG and Stick processes at different voltages and power sources.
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

Syncrowave 400 Machine Only

907783 (208/240/480 V)
Input power plug NOT included.

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)
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.

Genuine Miller® Accessories (continued)

Educational Materials

Gas Tungsten Arc Welding (TIG) Publication 250833

Tungsten

<table>
<thead>
<tr>
<th>Tungsten</th>
<th>Amp Range</th>
<th>2% Ceriated (AC/DC)</th>
<th>2% Lanthanated (AC/DC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/16 in. (1.6 mm)</td>
<td>70 – 150 A</td>
<td>WC116X7</td>
<td>WL2116X7</td>
</tr>
<tr>
<td>3/32 in. (2.4 mm)</td>
<td>140 – 250 A</td>
<td>WC332X7</td>
<td>WL2332X7</td>
</tr>
<tr>
<td>1/8 in. (3.2 mm)</td>
<td>225 – 400 A</td>
<td>WC018X7</td>
<td>WL2018X7</td>
</tr>
<tr>
<td>5/32 in. (4.0 mm)</td>
<td>300 – 500 A</td>
<td>WC532X7</td>
<td>WL2532X7</td>
</tr>
</tbody>
</table>
### Equipment and Options

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Stock No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syncrowave® 400</td>
<td>907783</td>
<td>208/240/480 V, 50/60 Hz</td>
</tr>
<tr>
<td>Syncrowave® 400 Complete with Wired Foot Control</td>
<td>951831</td>
<td>208/240/480 V, 50/60 Hz</td>
</tr>
<tr>
<td>Syncrowave® 400 Complete with Wireless Foot Control</td>
<td>951832</td>
<td>208/240/480 V, 50/60 Hz</td>
</tr>
</tbody>
</table>

### TIG Torch Kits and Connectors

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Stock No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>W-375 Water-Cooled Torch Kit</td>
<td>301268</td>
<td>See page 6 for contents</td>
</tr>
<tr>
<td>Water-Cooled TIG Torch Connector</td>
<td>195377</td>
<td>Connects Weldcraft™ water-cooled torches to Dinse-style connector</td>
</tr>
<tr>
<td>Air-Cooled TIG Torch Connector</td>
<td>195379</td>
<td>Connects Weldcraft™ A-200 (WP-26) torch to Dinse-style connector</td>
</tr>
</tbody>
</table>

### Remote Controls

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Stock No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wireless Remote Foot Control</td>
<td>300429</td>
<td>Foot control with wireless 90 ft. (27.4 m) operating range</td>
</tr>
<tr>
<td>Wireless Remote Hand Control</td>
<td>300430</td>
<td>Hand control with wireless 300 ft. (91.4 m) operating range</td>
</tr>
<tr>
<td>RFCS-14 HD</td>
<td>242211020</td>
<td>Hand control</td>
</tr>
<tr>
<td>RHC-14</td>
<td>194744</td>
<td>Heavy-duty foot control</td>
</tr>
<tr>
<td>RCCS-14</td>
<td>043688</td>
<td>North/south fingertip control</td>
</tr>
<tr>
<td>RCC-14</td>
<td>151066</td>
<td>East/west fingertip control</td>
</tr>
<tr>
<td>RML-14</td>
<td>129337</td>
<td>Momentary/maintained rocker switch</td>
</tr>
<tr>
<td>RMS-14</td>
<td>187208</td>
<td>Momentary rubber dome switch</td>
</tr>
</tbody>
</table>

### Accessories

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Stock No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIG Coolant (Must be ordered in quantities of four)</td>
<td>043810</td>
<td>1-gallon plastic bottle. Protects against freezing to -37°F (-38°C) or boiling to 227°F (108°C)</td>
</tr>
<tr>
<td>TIG Welding Gloves</td>
<td></td>
<td>Supplied with power source and torch kits</td>
</tr>
<tr>
<td>Cable Connectors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dinse-Style Connector 50 mm (1 male)</td>
<td>042418</td>
<td>Used to connect weld lead to Dinse terminal machine</td>
</tr>
<tr>
<td>Dinse-Style Connector 50 mm (1 male, 1 female)</td>
<td>042419</td>
<td>Used to extend weld cables</td>
</tr>
<tr>
<td>Dinse/Tweco® Adapter</td>
<td>042465</td>
<td>Male Dinse-style to female Tweco</td>
</tr>
<tr>
<td>Dinse/Cam-Lok Adapter</td>
<td>042466</td>
<td>Male Dinse-style to female Cam-Lok</td>
</tr>
<tr>
<td>Gas Tungsten Arc Welding (TIG) Publication</td>
<td>250833</td>
<td></td>
</tr>
</tbody>
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**Date:**

**Total Quoted Price:**

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