

# Maxstar® 700

Issued January 2006 • Index No. DC/24.5

**TIG/Stick Welding  
Power Source** 

## Quick Specs

### Industrial Applications

Precision Metal Fabrication  
Heavy Manufacturing  
Maintenance and Repair  
Pipe and Tube Manufacturing  
Aerospace  
Tool and Die  
TIG Automation

### Processes

TIG (GTAW)  
Pulsed TIG (GTAW-P)  
Stick (SMAW)

**Rated Output** 500 A at 40 V, 100% Duty Cycle (3-Phase)  
450 A at 38 VAC, 60% Duty Cycle (1-Phase)

**Amperage Range** 5–700 A

**Auto-Line Range** 208–575 V ( $\pm 10\%$ ), 1- or 3-Phase

**Weight** 198 lb (90 kg)

## The Power of Blue.®

**New!**

### Adjustable HF Arc Starting Parameters

Start Polarity (EP/EN), Start Amperage (amps) and Start Time. Optimize the arc start based on tungsten electrode diameter, material thickness and shielding gas.

**Program Memory** features 4 independent memory levels with Last Procedure Recall to maintain established parameters in each memory, all processes. (DC TIG and DC STICK).

**State-of-the-Art Operator Interface** is industry proven for reliability and provides the maximum setup and control features. Digital control settings provide precision and accuracy when setting welding parameters.

**Built-in Pulser** enhances weld bead control for improved appearance and quality. Reduces burn-thru, coordinates the addition of filler and reduces the warping effects of distortion by lowering the average welding amperage. High-speed pulsing capabilities can narrow the weld and heat-affect zone while increasing travel speeds.

**Built-in Sequence Control** allows the entire weld sequence to be preset and controlled by the welding power source for greater accuracy and repeatability.



**NEW! Thread Lock Cable Connectors and Torch Adapters** are designed for high amperage welding applications. Miller-patented technology incorporates locking threads into a 1/4-turn locking connector. Simply insert the plug and turn clockwise to lock the connection. Two power cable connectors and one TIG torch adapter included with every machine (base models and TIGRunners).

**AUTO-LINE**  
Power Management Technology

Allows for any input voltage hookup within a range (208–575 V), single- or three-phase, with no manual linking.

**115 V Auxiliary Power** provides 15 amps of 115 volt power to operate a Coolmate™ coolant system, grinder or other small power tool.

See page 2 for additional features.

**TRUE BLUE**  
3YR. WARRANTY

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

MADE IN USA  
APPLETON, WI



**Miller Electric Mfg. Co.**  
An Illinois Tool Works Company  
1635 West Spencer Street  
Appleton, WI 54914 USA

**International Headquarters**  
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USA FAX: 920-735-4134  
Canadian FAX: 920-735-4169  
International FAX: 920-735-4125

**Web Site**  
www.MillerWelds.com



## Additional Features

<b>DC Inverter</b>	Welding power source (CC TIG/STICK).
<b>Automation Interface Kit</b>	28-pin interface provides key automation controls and functions for plug and play system integration.
<b>Fan-On-Demand™</b>	Cooling system operates only when needed. Reduces amount of airborne contaminants pulled through the machine.
<b>HF Arc Starts</b>	Non-contact arc starting.
<b>Lift-Arc™ Starts</b>	Controlled contact arc starting for DC.
<b>Low OCV</b>	For STICK and Lift-Arc TIG welding.
<b>Superior Arc Performance</b>	In all processes.

## Specifications (Subject to change without notice.)

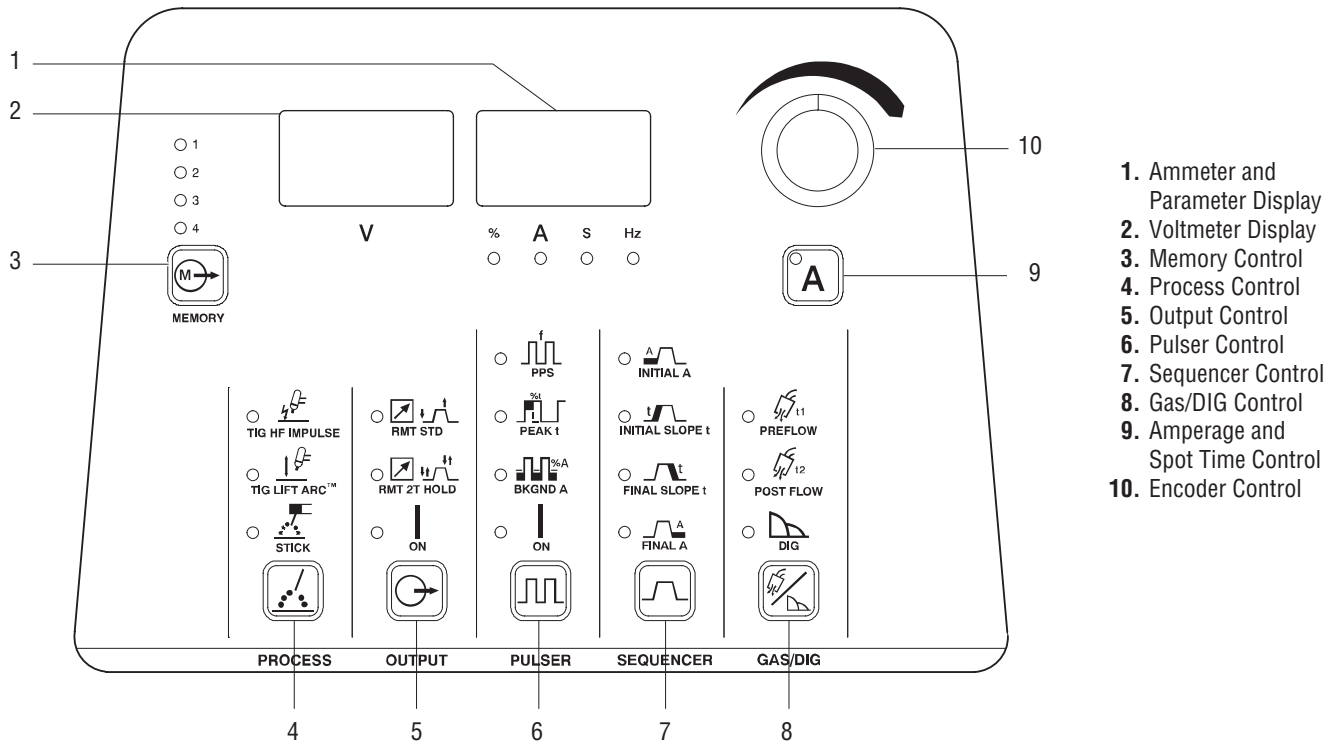


Welding Mode	Welding Amperage Range	Max. Open-Circuit Voltage	Input Power	Rated Output	Amps Input at Rated Load Output, 60 Hz								Dimensions	Net Weight
					208 V	230 V	400 V	460 V	575V	KVA	KW			
TIG (GTAW)	5–700 A	75 VDC 10–15 VDC*	3-Phase	500 A at 30 V, 100% Duty Cycle	53	48	27	24	19	19	18	H: 34-1/2 in (876 mm) W: 13-3/4 in (349 mm) D: 22 in (559 mm)	198 lb (90 kg)	
				600 A at 32 V, 60% Duty Cycle	71	66	37	33	26	25				
			1-Phase	360 A at 24 V, 100% Duty Cycle	56	53	—	27	20	12	11			
				450 A at 28 V, 60% Duty Cycle	82	74	—	37	28	17	16			
Stick (SMAW)	5–700 A	75 VDC 10–15 VDC*	3-Phase	500 A at 40 V, 100% Duty Cycle	67	61	34	30	24	24	23			
				600 A at 44 V, 60% Duty Cycle	89	81	45	40	31	32	31			
			1-Phase	360 A at 34 V, 100% Duty Cycle	78	69	—	33	25	16	15			
				450 A at 38 V, 60% Duty Cycle	108	95	—	45	35	22	21			

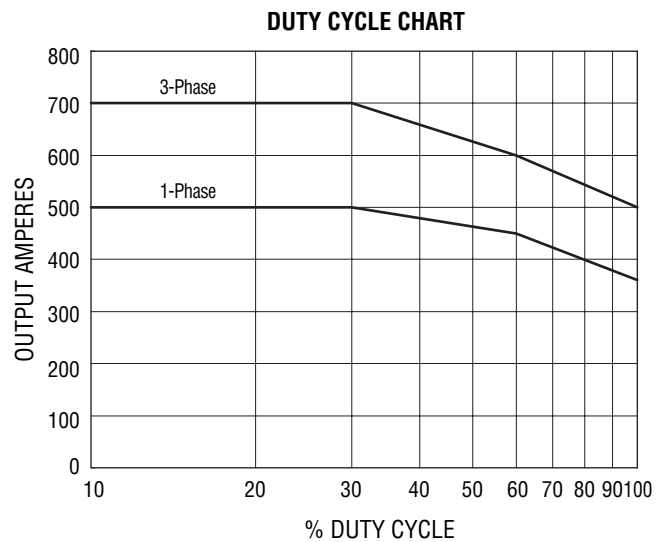
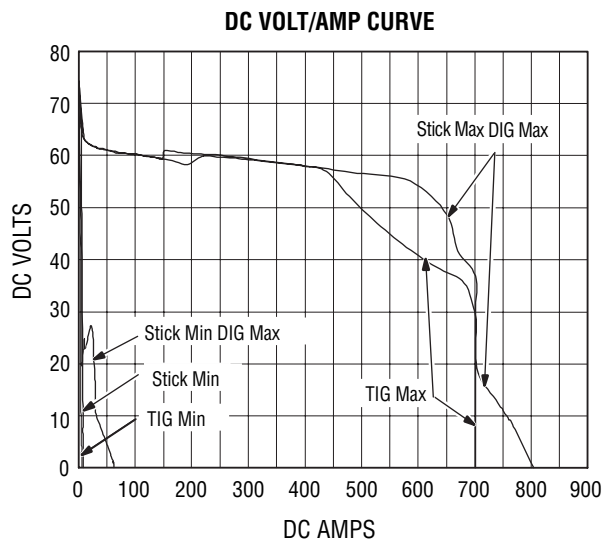
Certified to both the Canadian and U.S. Standards for welding equipment. Conforms to European standards.

\*Indicates sense-voltage for Lift-Arc TIG and Low OCV Stick.

# Control Panel



# Performance Data

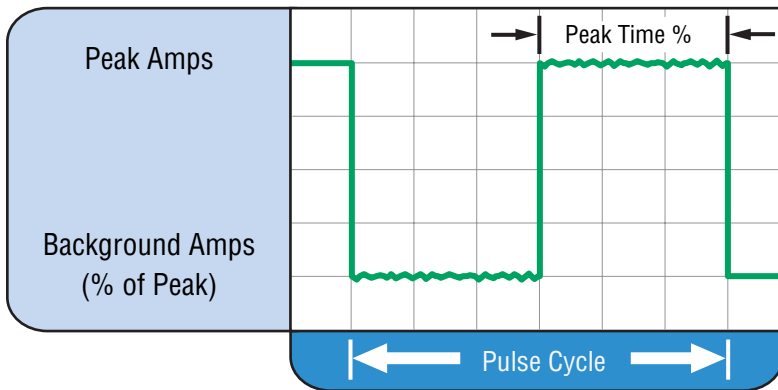


# Pulse TIG Controls

## High Speed DC TIG-Pulse Controls

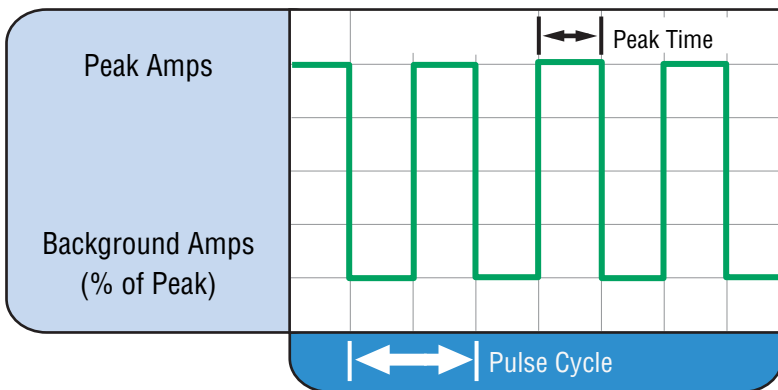
- **PPS Pulses per second (Hz):** DC = 0.1 – 5,000 PPS
- **% ON – % Peak Time:** 5 - 95% (Controls the amount of time during each pulse cycle at the PEAK amperage.)
- **Background Amps:** 5 – 99% (Sets the low-pulse amperage value as a % of the Peak Amps.)

### CONVENTIONAL PULSED TIG



Typically from 1 to 10 PPS. Provides a heating and cooling effect on the weld puddle and can reduce distortion by lowering the average amperage. This heating and cooling effect also produces a distinct ripple pattern in the weld bead. The relationship between pulse frequency and travel speed determines the distance between the ripples. Slow pulsing can also be coordinated with filler metal addition and can increase overall control of the weld puddle.

### HIGH SPEED PULSED TIG



In excess of 40 PPS, Pulsed TIG becomes more audible than visible — causing increased puddle agitation for a better as-welded microstructure. Pulsing the weld current at high speeds — between a high Peak and a low Background amperage — can also constrict and focus the arc. This results in maximum arc stability, increased penetration and increased travel speeds (Common Range: 100 – 500 PPS). The Arc-Sharpening effects of high speed pulsing are expanded to new dimensions. The ability to pulse at 5,000 PPS further enhances arc stability and concentration potential — which is extremely beneficial to automation where maximum travel speeds are required.

# Genuine Miller Options and Accessories

## Field Options

**Automation Interface Kit #195 516** Field Includes automation PC board, 28-pin socket receptacle with harness, 28-pin plug connector. Provides required and advanced automation controls.

## Packages

**Maxstar 700 #907 103 (CSA)  
#907 104 (CE)**

Includes machine only with (1) thread lock torch adapter, (2) thread lock power cable connectors and 115 V auxiliary power.



### Deluxe Cool Runner™ Cart and Cylinder Rack #300 050

Accommodates inverter power source and one gas cylinder. Includes consumable storage, cable and torch hangers, foot control storage, and 3-gallon Cool Runner™ cartridge. For use with Dynasty® 700 and Maxstar® 700 power sources.

## TIG (GTAW) Torches



### Weldcraft® TIG Torches

The Weldcraft line of TIG torches complements the most popular TIG power source line available today. The Weldcraft torch line includes both air-cooled and water-cooled models. Available with genuine Weldcraft parts.

### Water-Cooled Torch #WP18SC25RM

#### AK18C Accessory Kit #AK18C

Weldcraft® AK18C TIG torch accessory kit includes shielding cups, collets, collet bodies and 2% Cerium Tungsten Electrodes — 3/32, 1/8 and 5/32 in.

## Remote Controls and Switches



### RCC-14 Remote Contactor and Current Control #151 086

14-pin plug For all Miller solid-state power sources after serial number JK674521. Side-to-side (east-to-west) rotary-motion fingertip control fastens to TIG torch using two Velcro® straps. Great for production or contractors that need quick ramp-up. Includes 26.5 ft (8 m) control cord.



### RCCS-14 Remote Contactor and Current Control #043 688

14-pin plug For all Miller solid-state power sources after serial number JK674521. North/south rotary-motion fingertip control fastens to TIG torch using two Velcro® straps. Great for applications that require a finer amperage control. Includes 26.5 ft (8 m) control cord.



### RFCS-14 HD Foot Control #194 744

For all Miller solid-state power sources after serial number JK674521. This new design increases stability with a larger base, and durability with a heavier cord. 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 ft (6 m) cord and 14-pin plug.



### RHC-14 Hand Control #129 340

Miniature hand control for remote current and contactor control. Dimensions: 4 x 4 x 3-1/4 in (102 x 102 x 83 mm). Includes 20 ft (6 m) cord and 14-pin plug.



### RMLS-14 Switch #129 337

For all Miller solid-state power sources after serial number JK674521. Momentary- and maintained-contact rocker switch for contactor control. Push forward for maintained contact and backward for momentary contact. Includes 26.5 ft (8 m) cord and 14-pin plug.



### RMS-14 On/Off Control #187 208

For all Miller solid-state power sources after serial number JK674521. Momentary-contact switch for contactor control. Rubber-covered pushbutton dome switch ideal for repetitive on-off applications. Includes 26.5 ft (8 m) cord and 14-pin plug.

### Extension Cords for 14-Pin Remote Controls

#122 973 25 ft (7.6 m)

#122 974 50 ft (15.2 m)

#122 975 75 ft (23 m)

### Gas Tungsten Arc (TIG) Welding Book #170 555

To order this item, distributors can call the Miller Literature Distribution Center at 1-920-735-4356, or FAX 1-920-735-4011. 86 pages — 8-1/2 x 11 in. A comprehensive text on all aspects of the GTAW process. Filled with figures and tables to illustrate process technique and equipment setup. Glossary of TIG terms also provided.

### TIG Training CD #196 567

Designed for anyone who's looking to better understand the TIG process. Easy to understand instruction, proven teaching steps, and expert advice help to create a more effective academic approach to training. Subject areas covered include system components, process fundamentals, electrical theory, safety, power source operation.

### Video—GTAW Setup Procedures #108 241

To order this item, distributors can call the Miller Literature Distribution Center at 1-920-735-4356, or FAX 1-920-735-4011. 13:00 minutes. A detailed demonstration on preparing your equipment for TIG welding. Uses a Syncrowave® 250 power source, but topics fit any TIG setup including air-or water-cooled systems. In-depth discussion of tungstens and gases.

### Water Coolant Systems For more information, see the Miller Coolant Systems literature sheet, Index No. AY/7.2.

#### Coolmate™ 3

#043 007 115 VAC

#043 007-01-2 115 VAC, CE

#043 008 230 VAC

#043 008-01-2 230 VAC, CE

For use with water-cooled torches rated up to 600 amps. Unique paddle-wheel indicator, external filter and easy-fill spout. 3-gallon capacity.

#### Coolmate™ V3

#043 009 115 VAC

#043 009-01-2 115 VAC, CE

For use with water-cooled torches rated up to 500 amps. Vertical design conveniently mounts to Miller cylinder rack in place of one cylinder. 3-gallon capacity.

#### Coolmate™ 4

#042 288 115 VAC

#042 288-01-5 115 VAC, CE

For use with water-cooled torches rated up to 600 amps. Tough molded polyethylene case with carrying handle. 4-gallon capacity.

#### Low Conductivity Coolant #043 810

Sold in cases of four 1-gallon recyclable plastic bottles. Miller coolants contain a base of ethylene glycol and deionized water to protect against freezing to -37°F (-38°C) or boiling to 227°F (108°C). Also contains a compound that resists algae growth.



Coolmate 3

Coolmate V3

Coolmate 4



# Ordering Information

Equipment and Options	Stock No.	Description	Qty.	Price
<b>Maxstar® 700</b>	<b>#907 103</b>	208–575 VAC, 50/60 Hz, <b>CSA</b>		
	<b>#907 104</b>	400 VAC, 50/60 Hz, <b>CE</b>		
<b>Automation Interface Kit</b>	<b>#195 516</b>	Field. Provides required automation connections		
<b>Accessories</b>				
TIG Torch Adapter w/90° Auxiliary Hose	<b>#225 028</b>	Water-cooled thread lock torch adapter. 7/8 LH thread (Package of 1)		
Cable Connectors	<b>#225 029</b>	Thread lock connectors. (Package of 2)		
Deluxe Cool Runner™ Carrying Cart and Cylinder Rack	<b>#300 050</b>	Includes cart and Cool Runner cartridge (3-gallon capacity)		
<b>Remote Controls</b>				
RCC-14	<b>#151 086</b>	Side-to-side fingertip control		
RCCS-14	<b>#043 688</b>	North/south fingertip control		
RFCS-14HD	<b>#194 744</b>	Heavy-duty foot control		
RHC-14	<b>#129 340</b>	Hand control		
RMLS-14	<b>#129 337</b>	Momentary/maintained rocker switch		
RMS-14	<b>#187 208</b>	Momentary rubber dome switch		
Extension Cords	<b>#122 973</b>	25 ft (7.6 m)		
	<b>#122 974</b>	50 ft (15.2 m)		
	<b>#122 975</b>	75 ft (22.9 m)		
<b>TIG Welding</b>				
Weldcraft TIG Torches	<b>#WP18SC25RM</b>	Replacement TIG torch		
AK18C Accessory Kit	<b>#AK18C</b>	TIG torch accessory kit for WP18SC25RM torch		
Consumables and Tungsten		Distributor: See Miller Parts Catalog		
Gas Cylinder, Hose and Fittings				
<b>Stick Welding</b>				
Stick Electrodes				
<b>Coolant Systems</b>				
Coolmate™ 3	<b>#043 007</b>	115 VAC		
	<b>#043 007-01-2</b>	115 VAC, <b>CE</b>		
	<b>#043 008</b>	230 VAC		
	<b>#043 008-01-2</b>	230 VAC, <b>CE</b>		
Coolmate™ V3	<b>#043 009</b>	115 VAC. Upright		
	<b>#043 009-01-2</b>	115 VAC, <b>CE</b> . Upright		
Coolmate™ 4	<b>#042 288</b>	115 VAC		
	<b>#042 288-01-5</b>	115 VAC, <b>CE</b>		
Low Conductivity Coolant	<b>#043 810</b>			
Coolant System Hoses				
<b>Miscellaneous</b>				
Welding and Work Cables				
Welding Gloves and Helmet				

Date:

Total Quoted Price:



Distributed by: