Maxstar® 350 and 700

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TIG/Stick Welding Power Source

Quick Specs

Industrial Applications
Precision Metal Fabrication
Tube Mills
Pipe and Tube Fabrication
Tool and Die
Exotic Material Fabrication
Pressure Vessel Fabrication

Processes
TIG (GTAW)
Pulsed TIG (GTAW-P)
Stick (SMAW)
Air Carbon Arc (CAC-A)
350: 1/4 in maximum
700: 3/8 in maximum

Input Power 208–575 V, 3- or 1-Phase

Amperage Range
350: 3–350 A
700: 5–700 A

Rated Output
350: 300 A at 32 V, 60% Duty Cycle
700: 600 A at 44 V, 60% Duty Cycle

Weight
350: 135.5 lb (61 kg)
700: 198 lb (90 kg)

The Power of Blue®

AUTO-LINE Power Management Technology Allows for any input voltage hookup (208–575 V) with no manual linking, providing convenience in any job setting. Ideal solution for dirty or unreliable power.

***NEW!* Blue Lightning™** — High Frequency Arc Starter for non-contact arc initiation. More consistent arc starts compared to traditional HF arc starters. Greater reliability and no maintenance on solid-state components. Preset parameters for tungsten sizes from .020 – ¼ inch provide optimized starting for applications from thick to micro thin. For unique applications, custom settings are programmable.

Lift-Arc™ start provides arc starting without the use of high frequency.

Meter Calibration allows meters to be calibrated for certification.

120 V auxiliary power receptacle for cooling system or small tools.

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

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

Maxstar 700

Maxstar 350

Program memory features 9 independent program memories that maintain/save your parameters.

DC TIG Features

Exceptionally smooth and precise arc for welding exotic materials.

High-Speed DC TIG Pulse Control — pulse frequency capable of pulsing 5000 pulses per second. Pulsing adds arc stability, reduces heat input and warpage and can increase travel speeds. Other parameters include peak amperage, peak time and background amperage.

DC Stick Features

Tailored arc control (DIG) allows the arc characteristic to be changed for specific applications and electrodes. Smooth running 7018 or stiffer, more penetrating 6010.

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

Auto-Postflow calculates the length of postflow time based on the amperage setting. This eliminates the need to independently set the postflow time for different amperages. This feature preserves your tungsten and prevents porosity.

TRUE BLUE® 3 YR. WARRANTY

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

MADE IN USA
APPLETON, WI

Miller®

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

Equipment Sales US and Canada
Phone: 866-931-9730
FAX: 800-637-2315
International Phone: 920-735-4554
International FAX: 920-735-4125

Web Site
www.MillerWelds.com

ISO 9001:2000 REGISTERED QUALITY SYSTEM

Specifications (Subject to change without notice.)

CC DC 3 Phase 1 Phase

Model	Input Power	Welding Amperage Range	Max. Open-Circuit Voltage	Rated Output	Amps Input at Rated Load Output, 50/60 Hz 208 V	230 V	400 V	460 V	575V	KVA	KW	Dimensions	Net Weight
Maxstar 350	Three-Phase	3–350 A	75 VDC 10–15 VDC*	250 A at 30 V, 100% Duty Cycle	27	24	14	12	9	9.7	9.3	H: 24-3/4 in (629 mm) W: 13-3/4 in (349 mm) D: 22 in (559 mm) **with TIGRunner®** H: 45-1/8 in (1146 mm) W: 23-1/8 in (587 mm) D: 43-3/4 in (1111 mm)	135.5 lb (61 kg) **with TIGRunner®** 308 lb (140 kg)
				300 A at 32 V, 60% Duty Cycle	33	30	17	15	12	12	11.5		
	Single-Phase	3–350 A	75 VDC 10–15 VDC*	180 A at 27.2 V, 100% Duty Cycle	32	16	—	14	11	6.4	6		
				225 A at 29 V, 60% Duty Cycle	41	37	—	19	15	8.6	8.2		
Maxstar 700	Three-Phase	5–700 A	75 VDC 10–15 VDC*	500 A at 40 V, 100% Duty Cycle	67	60	35	30	24	24	23	H: 34-5/8 in (879 mm) W: 13-3/4 in (349 mm) D: 22 in (559 mm)	198 lb (90 kg)
				600 A at 44 V, 60% Duty Cycle	89	80	46	40	32	32	31		
	Single-Phase	5–700 A	75 VDC 10–15 VDC*	360 A at 34 V, 100% Duty Cycle	77	70	—	35	28	16	15		
				450 A at 38 V, 60% Duty Cycle	106	96	—	48	38	22	21		

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

All CE models conform to the applicable parts of the IEC 60974 series of standards.

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

Performance Data

DUTY CYCLE

Maxstar 350

3-PHASE

%	AMPERAGE
30%	350 A
60%	300 A
100%	250 A

1-PHASE

%	AMPERAGE
10%	350 A
30%	250 A
60%	225 A
100%	180 A

Maxstar 700

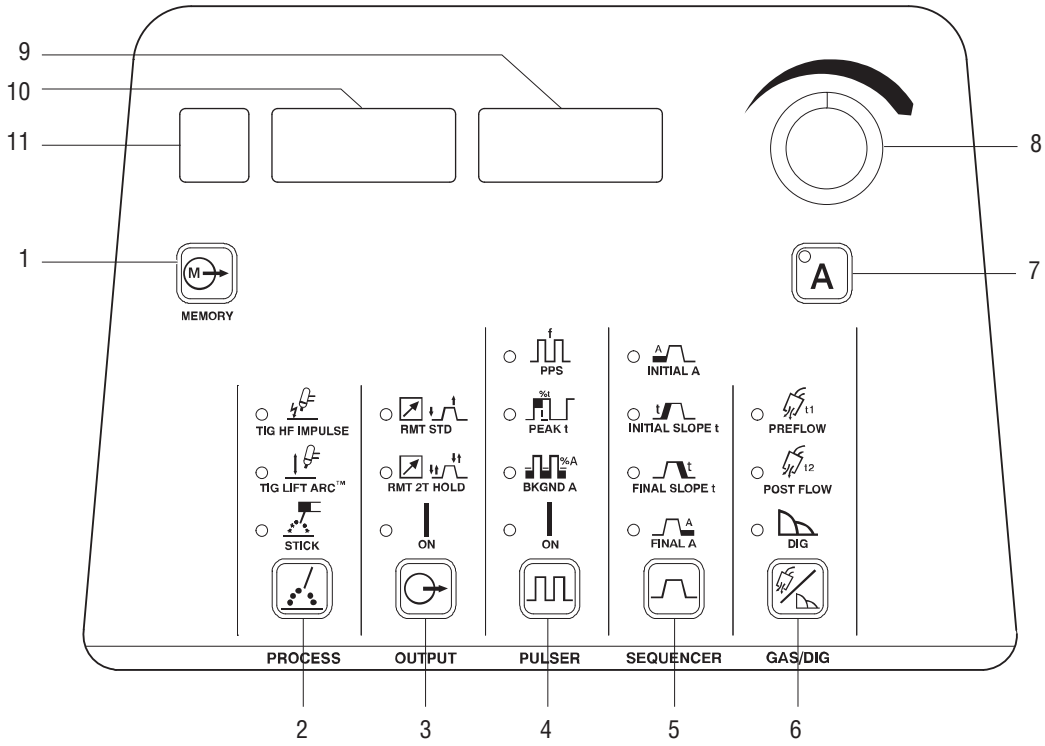
3-PHASE

%	AMPERAGE
30%	700 A
60%	600 A
100%	500 A

1-PHASE

%	AMPERAGE
10%	700 A
30%	500 A
60%	450 A
100%	360 A

Maxstar® 350 and 700 Control Panel



Control Panel Parameter Values

1. Memory 18 Combinations (9 DC TIG) (9 DC Stick)

2. Process/ Arc Starting TIG: HF Impulse, Lift Arc
STICK: Adaptive Hot Start

3. Output Control Standard Remote, 2T Trigger Hold, Output ON

4. Pulser Control

Pulses per Second	DC: 0.1–5000 PPS
Peak Time	5–95%
Background Amps	5–95%

5. Sequencer Control

Initial Amps	Maxstar 350: 3–350 A Maxstar 700: 5–700 A
Initial Slope	0.0–50.0 Seconds
Final Slope	0.0–50.0 Seconds
Final Amps	Maxstar 350: 3–350 A Maxstar 700: 5–700 A

6. Gas/DIG Preflow 0.0–25.0 Seconds

Postflow Auto Postflow, Adjust 0.0–50 Seconds

DIG 0–100%

7. Amperage Control

8. Encoder Control

9. Ammeter Display

10. Voltmeter Display

11. Memory Display

Additional Setup Parameter Values

Preprogrammed Starts

Maxstar 350	.020 – 3/16 in Tungsten
Maxstar 700	.020–1/4 in Tungsten

Programmable Starts

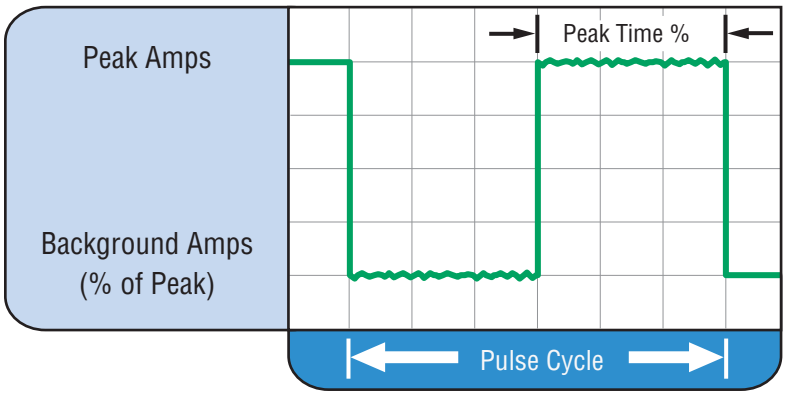
Amperage	Maxstar 350: 3–200 A Maxstar 700: 5–200 A
Time	1–200 Milliseconds
Ramp Time	0– 250 Milliseconds
Minimum Amperage	Maxstar 350: 3– 25 A Maxstar 700: 5– 25 A
Additional Triggers	3T, 4T, Mini Logic, 4T Momentary
Spot/Weld Timer	0.0–999 Seconds
OCV	Low OCV, Normal OCV
Stick Stuck Check	On/Off
Lockouts	Four levels
Arc Timer	0.0–9999 Hours and 0–59 Min
Cycle Counter	0–999,999 Cycles
Meter Calibration	±0–20.0 Amps ±0–20.0 Volts

Pulse TIG Controls

High Speed DC TIG-Pulse Controls

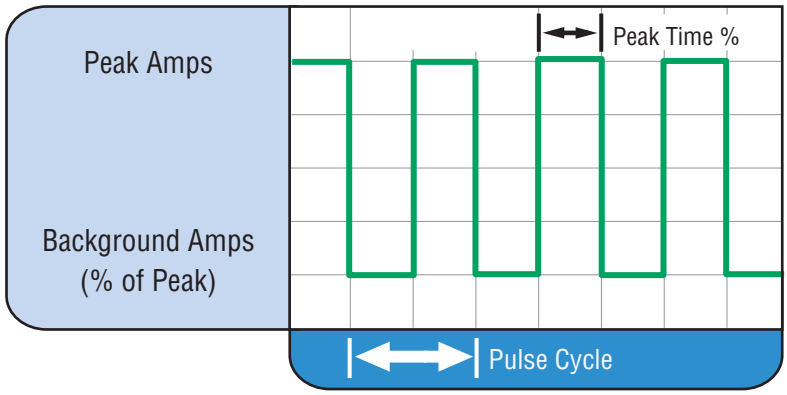
- **PPS Pulses per second (Hz):** DC = 0.1 – 5,000 PPS
- **% ON – % Peak Time:** 5 - 95% (Controls the amount of time during each pulse cycle at the PEAK amperage.)
- **Background Amps:** 5 – 99% (Sets the low-pulse amperage value as a % of the Peak Amps.)

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.

Packages

Maxstar® Power Sources

Maxstar® 350 #907 334 (CSA)
(Auto-Line™ 208–575 VAC)

Maxstar® 350 #907 334-02-1 (CE)
(Auto-Line™ 380–575 VAC)

8 ft (2.4 m) primary cord, (2) international (Dinse 50) connectors, and CD-ROM Setup and Simulator.

Note: TIG torch adapter must be ordered separately.

Maxstar® 700 #907 103 (CSA)
(Auto-Line™ 208–575 VAC)

Maxstar® 700 #907 103-02-1 (CE)
(Auto-Line™ 380–575 VAC)

(2) thread lock weld cable connectors (#225 029), (1) water-cooled thread lock torch adapter (#225 028) for #18 or #20 torches, and CD-ROM Setup and Simulator.

Note: Primary cord and TIG torch must be ordered separately.

TIGRunner® Package

Maxstar 350 TIGRunner®
#907 334-01-1 (CSA)

Completely assembled.

Package includes:
- Maxstar® 350 (#907 334)
- RFCS-14 HD remote foot control
- Coolmate™ 3.5 Coolant System
- Cart with the following features: single cylinder rack, foot pedal holder, (3) cable/torch holders, (2) TIG electrode filler holders and a convenient drawer for tungsten and consumable storage

Note: Torch package and coolant must be ordered separately.

Complete Package

Maxstar 350 Complete #951 073 (CSA)

Completely assembled.

Package includes:
- Maxstar® 350 TIGRunner® (#907 334-01-1)
- 25 ft (7.6 m) Weldcraft CS310 torch
- Torch cable cover
- CS310AKC torch accessory kit includes shielding cups, collets, collet bodies and 2% cerium tungsten electrodes (1/16, 3/32, and 1/8 in)
- Smith regulator/flowmeter HM2051A-580
- 12 ft (3.7 m) rubber gas hose (regulator to machine)
- Water-cooled Dinse torch adapter
- 15 ft (4.6 m) 1/0 weld lead with clamp (work or ground lead) and Dinse connector
- 4 gallons of pre-mixed low-conductivity coolant (#043 810)

Genuine Miller Accessories

Torch Kits

250 A Water-Cooled Torch Kit #300 185
- 25 ft (7.6 m) Weldcraft® WP20 torch
- Torch cable cover
- AK4C torch accessory kit includes shielding cups, collets, collet bodies and 2% cerium tungsten electrodes (1/16, 3/32 and 1/8 in)
- Smith® regulator/flowmeter HM2051A-580
- 12 ft (3.7 m) rubber gas hose (regulator to machine)
- Water-cooled Dinse torch adapter
- 15 ft (4.6 m) 1/0 weld lead with clamp (work or ground lead) and Dinse connector

300 A Water-Cooled Torch Kit #300 183
Recommended for Maxstar 350
- 25 ft (7.6 m) Weldcraft® CS310 torch
- Torch cable cover
- CS310AKC torch accessory kit includes shielding cups, collets, collet bodies and 2% cerium tungsten electrodes (1/16, 3/32 and 1/8 in)
- Smith® regulator/flowmeter HM2051A-580
- 12 ft (3.7 m) rubber gas hose (regulator to machine)
- Water-cooled Dinse torch adapter
- 15 ft (4.6 m) 1/0 weld lead with clamp (work or ground lead) and Dinse connector

400 A Water-Cooled Torch Kit #300 186
Recommended for Maxstar 700
- 25 ft (7.6 m) Weldcraft® WP18SC torch
- Torch cable cover
- AK18C torch accessory kit includes shielding cups, collets, collet bodies and 2% cerium tungsten electrodes (3/32, 1/8 and 5/32 in)
- Smith® regulator/flowmeter H1954D-580
- 12 ft (3.7 m) rubber gas hose (regulator to machine)
- Water-cooled thread lock torch adapters
- 12 ft (3.7 m) 4/0 weld lead with clamp (work or ground lead)

TIG Welding Gloves
#227 813 Small
#227 814 Medium
#227 815 Large
#227 816 X-Large
Made from soft grain goatskin. Sewn with Kevlar® thread.

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.

Weld Current Sensor #300 179
Detects when work clamp is not connected and prevents expensive damage to disconnect devices and input power cord and wiring.

Educational Materials

To order these items, distributors can call the Miller Literature Distribution Center at 1-920-735-4356, or FAX 1-920-735-4011.

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

CD-ROM #233 558
Simulator and setup video (included with machine).

Tungsten

Tungsten is 7 in length and available in pkgs of 10. Order from Miller Parts.

2% Ceriated (orange) for AC/DC applications
#WC040X7 .040 in, 10–80 A
#WC116X7 1/16 in, 70–150 A
#WC332X7 3/32 in, 140–250 A
#WC018X7 1/8 in, 225–400 A
#WC532X7 5/32 in, 300–500 A

1.5% Lanthanum (gold) for AC/DC applications
#WL040X7 .040 in, 10–80 A
#WL116X7 1/16 in, 70–150 A
#WL332X7 3/32 in, 140–250 A
#WL018X7 1/8 in, 225–400 A
#WL532X7 5/32 in, 300–500 A

2% Thoriated (red) for DC applications only
#WT040X7 .040 in, 10–80 A
#WT116X7 1/16 in, 70–150 A
#WT332X7 3/32 in, 140–250 A
#WT018X7 1/8 in, 225–400 A
#WT532X7 5/32 in, 300–500 A

Runner Cart #300 244
Designed to accommodate the Dynasty® or Maxstar® 350 or 700 power sources and the Coolmate™ 3.5 Cooler. Cart features: single cylinder rack, foot pedal holder, (3) cable/torch holders, (2) TIG electrode filler holders and a convenient drawer for tungsten and consumable storage.

Coolmate™ 3.5 #300 245
Designed to integrate with the Dynasty® and Maxstar® 350 and 700 power sources. For use with water-cooled torches rated up to 600 amps. 3.5 gallon capacity.

TIG Coolant #043 810
Sold in multiples of 4. Pre-mixed low-conductivity Miller coolant contains ethylene glycol and deionized water to protect from freezing and boiling -37° to 227°F (-38° to 108°C). 1-gallon plastic recyclable bottles.

Water-Cooled Dinse #195 377
For Maxstar® 350. Used to adapt WP20, WP18, and CS310 to dinse-style connector. *Order from Miller Parts.*

Water-Cooled Thread Lock #225 028
For Dynasty and Maxstar 700. Used with (WP125, WP24W, WP25, WP20, WP18, WP12, CS310, CS410, WP22, WP27) water-cooled torch. *Order from Miller Parts.*

Remote Controls and Switches

RCCS-14 Remote Contactor and Current Control #043 688 14-pin plug
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
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
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
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)

Ordering Information

Equipment and Options	Stock No.	Description	Qty.	Price
Maxstar® 350	**#907 334**	Auto-Line™ 208 – 575 VAC, 50/60 Hz, **CSA.** 8 ft primary cord		
Maxstar® 350 International	**#907 334-02-1**	Auto-Line™ 380 – 575 VAC, 50/60 Hz, **CE.** 8 ft primary cord		
Maxstar® 350 TIGRunner®	**#907 334-01-1**	Auto-Line™ 208 – 575 VAC, 50/60 Hz, **CSA.** 8 ft primary cord. *Requires coolant*		
Maxstar® 350 Complete	**#951 073**	Auto-Line™ 208 – 575 VAC, 50/60 Hz, **CSA.** 8 ft primary cord.		
Maxstar® 700	**#907 103**	Auto-Line™ 208 – 575 VAC, 50/60 Hz, **CSA**		
Maxstar® 700 International	**#907 103-02-1**	Auto-Line™ 380 – 575 VAC, 50/60 Hz, **CE**		
TIG Torch Kits				
Weldcraft® 250 A Water-Cooled Torch Kit	**#300 185**	See page 6		
Weldcraft® 300 A Water-Cooled Torch Kit	**#300 183**	See page 6. Recommended for Maxstar 350		
Weldcraft® 400 A Water-Cooled Torch Kit	**#300 186**	See page 6. Recommended for Maxstar 700		
Consumables and Tungsten		Distributor: See Miller Parts Catalog		
Gas Cylinder, Hose and Fittings				
Remote Controls				
RCCS-14	**#043 688**	North/south fingertip control		
RFCS-14 HD	**#194 744**	Heavy-duty foot control		
RHC-14	**#129 340**	Hand control		
RMLS-14	**#129 337**	Momentary/maintained rocker switch		
RMS-14	**#187 208**	Momentary rubber dome switch		
Extension Cords	**#122 973** **#122 974** **#122 975**	25 ft (7.6 m) 50 ft (15.2 m) 75 ft (22.9 m)		
Accessories				
Runner™ Cart	**#300 244**	See page 6		
Coolmate™ 3.5	**#300 245**	*Requires coolant*		
TIG Coolant	**#043 810**	Sold in multiples of 4. 1-gallon plastic bottles.		
Automation Interface Kit	**#195 516**	Field. Provides required automation connections		
Weld Current Sensor	**#300 179**	Field. Installation required.		
Gas Tungsten Arc (TIG) Welding Book	**#170 555**	*Order at MillerWelds.com/resources/tools*		
CD-ROM	**#233 558**	Simulator and setup video (included with machine)		
Torch Adapters		*Supplied with power source and torch kits*		
Water-Cooled Dinse	**#195 377**	Used to connect water-cooled torch to Dinse terminal machine. For WP20, WP18 and CS310 (adapter included in Complete Package). *Order from Miller Parts*		
Water-Cooled Thread Lock	**#225 028**	Used to connect water-cooled torch to Dynasty/Maxstar 700. *Order from Miller Parts*		
Cable Connectors		*Supplied with power source and torch kits*		
Dinse Connector 50 mm (1 male)	**#042 418**	Used to connect weld lead to Dinse terminal machine		
Thread Lock Connectors (2 male)	**#225 029**	Used to connect weld lead to Dynasty 700 or Maxstar 700. *Order from Miller Parts*		
Dinse Connector 50 mm (1 male, 1 female)	**#042 419**	Used to extend weld cables		
Tweco Terminal Adapter	**#042 465**	Male Dinse to female Tweco		
Cam-Lok Terminal Adapter	**#042 466**	Male Dinse to female Cam-Lok		
Miscellaneous				
Stick Electrodes				
Welding and Work Cables				
Welding Gloves and Helmet				

Date: **Total Quoted Price:**

Distributed by:

Miller®

Litho in USA