PipeWorx™ Welding System

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Multiprocess Pipe Welding Systems

Quick Specs

Pipe Welding Fabrication
Process Piping
Refinery
Petrochemical
Power
HVAC and Water Pipe

Processes
Stick (SMAW)
DC TIG (GTAW)
MIG (GMAW)
MIG RMD™ (GMAW MSC)
Pro-Pulse™ (GMAW-P)
Flux Cored (FCAW)

Rated Output	400 A at 44 VDC, 100% Duty Cycle
Voltage Range	10–44 V
Amperage	**Stick:** 40–350 A **DC TIG:** 10–350 A
Weight	**Power Source:** 225 lb (102 kg) **Single Feeder:** 65 lb (29.5 kg) **Dual Feeder:** 90 lb (41 kg) **Cooler:** 133 lb (60 kg)

The Power of Blue®

New! Designed exclusively for pipe fabrication shops

Simple Process Setup

- Clearly labeled controls in easy-to-understand welder terminology.
- Requires just a few basic steps to set up a new weld process, resulting in less training time and minimizing errors from incorrect setups.
- The front panel was designed by welders for welders. Only backlit controls are adjustable to eliminate confusion.
- Memory feature stores 4 programs for each selection: Stick, DC TIG, and MIG (left and right side of feeder). Beneficial when using multiple procedures, multiple process parameters or multiple welders and eliminates the need to remember parameters.

Quick Process Changeover

- No need to manually switch polarity or cables and hoses between processes. Simply push a process selection button to choose a welding process. PipeWorx 'Quick-Select' technology automatically selects the welding process, the correct polarity, cable outputs and user programmed welding parameters.
- Quick process changeover eliminates set-up time for switching cables and gas hoses. Also, reduces the risk of weld reworks due to incorrect cable connection.

PipeWorx Welding System #951 131 shown.
(Filler metal sold separately)

Multiprocess Machine

- Weld processes are optimized to deliver superior arc performance and stability specifically for root pass, fill and cap pipe welding.
- Includes conventional Stick, DC TIG (Lift-Arc™ or HF Start), Flux Cored and MIG welding processes.
- Also features the advanced RMD™ Pro and Pro-Pulse™ processes that deliver superior quality welds, increase productivity, and reduce rework and training.

Streamlined System

- Wind Tunnel Technology™ and Fan-On-Demand™ provide system protection in the dusty shop environment.
- Innovative cable and gun storage manages clutter for a cleaner, organized weld-cell area. Cables remain connected to the power source and do not need to be switched for the different welding processes.
- All system components have been selected to meet the needs of a pipe fabrication shop.

TRUE BLUE® 3YR. WARRANTY

Power source is warranted for 3 years, parts and labor.

MADE IN USA
APPLETON, WI

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An Illinois Tool Works Company
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Web Site
www.MillerWelds.com

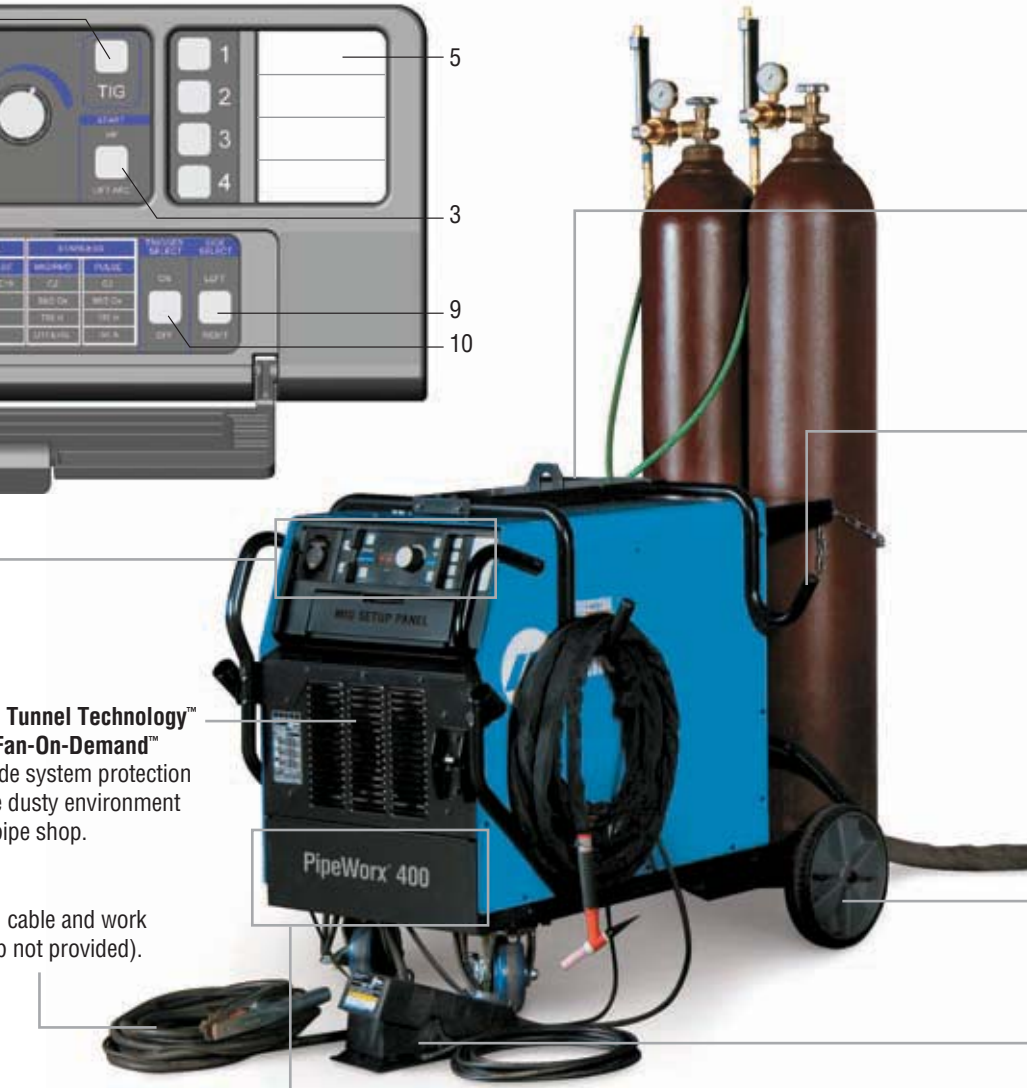
ISO 9001:2000 REGISTERED QUALITY SYSTEM

PipeWorx™ Welding System

Typical System with Remote Feeder — See page 6 for systems

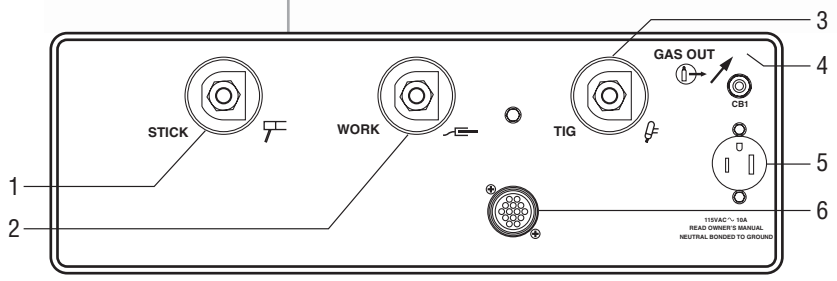
PipeWorx Power Source Control Panel with Door Open

1. **Process Selection** clearly backlights adjustable controls and lights the appropriate meter—Stick or DC TIG. TIG Gas Pre-flow and Post-flow optimized for the application.
2. **Optimized Stick Welding Conditions**—Automatically sets the optimum welding conditions for common E6010 Series and E7018 Low Hydrogen Series electrodes.
3. **Versatile TIG Arc Starts**—Select between lift arc starting or high frequency starting with the push of a button.
4. **Memory Card** provides the ability to save the process parameters of all memory locations. Each welder can have their own machine settings.
5. **Memory** stores 4 programs for each selection Stick, TIG, MIG (left and right). This eliminates the need to remember parameters. The convenient white board area can be customized using magnetic strips, grease pencils or erasable markers.
6. **Flux Cored Selection** provides the optimum weld conditions for welding pipe with flux cored wires.
7. **MIG Starts and Stops** are optimized based on selection of material type, wire diameter and shielding gas type. No setting required.
8. **The MIG-Modified Short Circuit (RMD) Programs and Pro-Pulse™ MIG Programs** are synergic programs designed specifically to provide optimum pipe welding performance for combinations of wire type, wire diameter and shielding gas. See pages 4 and 5 for welding process information.
9. **Left/Right Side Feeder Select**
10. **Remote Program Select** allows the welder to select a stored program without returning to the power source.



Wind Tunnel Technology™ and Fan-On-Demand™ provide system protection in the dusty environment of a pipe shop.

(weld cable and work clamp not provided).



Cable Connection Panel

Note: MIG connections are on rear panel of power source—see Owner's Manual.

1. **Dedicated Stick Connection**
2. **Dedicated Work Cable Connection**
3. **Dedicated TIG Torch Cable Connection**
4. **Dedicated TIG Gas Hose Connection**—Built-in TIG gas solenoid automatically turns gas on/off in HF or Lift Arc mode.
5. **115 VAC (10 amp) Receptacle** for water cooler, if used.
6. **Dedicated TIG Remote Receptacle**

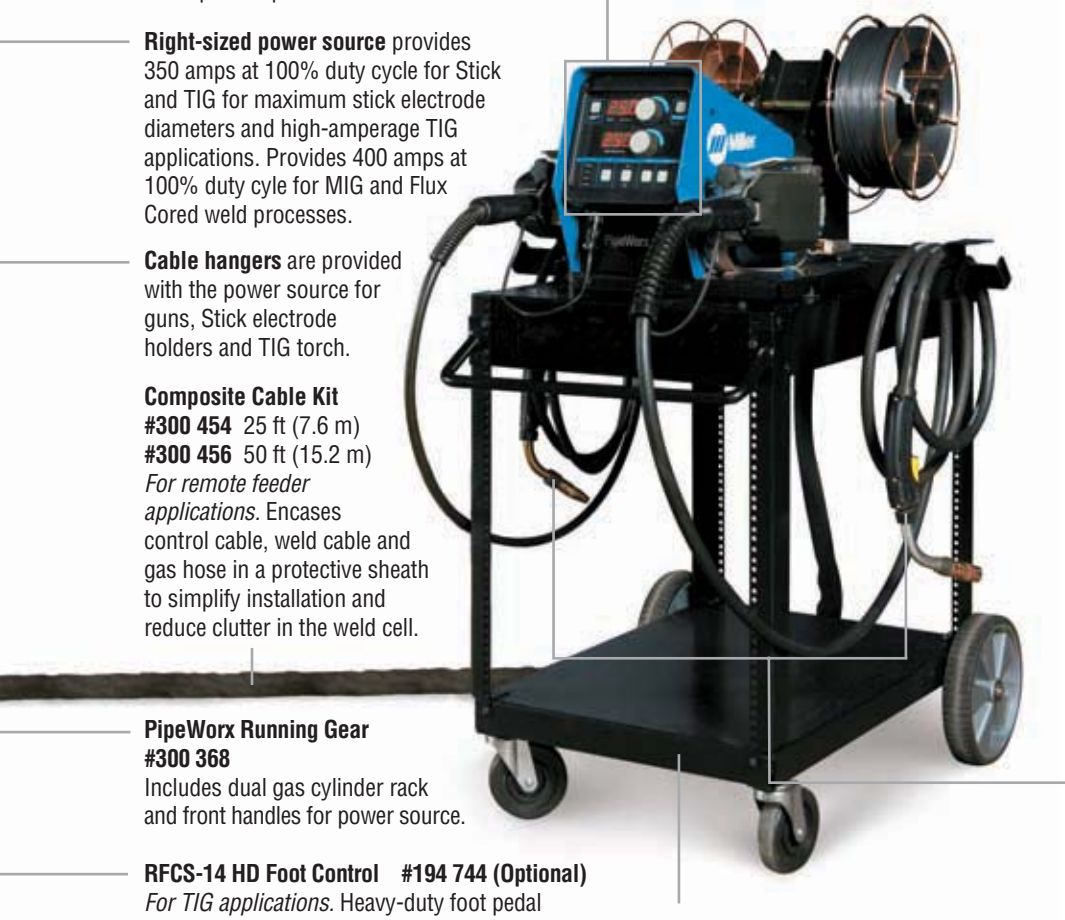
PipeWorx™ Welding System (Continued)

Single or dual wire feeder available with simple operator interface. Wire feed speeds up to 780 IPM.

Right-sized power source provides 350 amps at 100% duty cycle for Stick and TIG for maximum stick electrode diameters and high-amperage TIG applications. Provides 400 amps at 100% duty cyle for MIG and Flux Cored weld processes.

Cable hangers are provided with the power source for guns, Stick electrode holders and TIG torch.

Composite Cable Kit
#300 454 25 ft (7.6 m)
#300 456 50 ft (15.2 m)
For remote feeder applications. Encases control cable, weld cable and gas hose in a protective sheath to simplify installation and reduce clutter in the weld cell.



PipeWorx Running Gear
#300 368
Includes dual gas cylinder rack and front handles for power source.

RFCS-14 HD Foot Control #194 744 (Optional)
For TIG applications. Heavy-duty foot pedal current/contactor control with increased stability and durability from larger base and heavier cord. Reconfigurable cord can exit front, back or either side of the pedal for flexibility. Includes 20 ft (6 m) cord and 14-pin plug

Feeder Cart #300 467
For remote feeder applications. Includes cable hangers and consumables drawer.

Bernard® PipeWorx guns configured for pipe welding applications.

PipeWorx Remote Feeder Interface
#300 597
Designed for manipulators and other mechanized devices used to hold the torch in roll-welding applications. It features a simple operator interface with LEDs for easy viewing.

1. **MIG Process Type Indicator** is helpful in remote feeder applications.
2. **Jog** feeds the wire through the torch.
3. **Trigger Hold** reduces welder fatigue by allowing continuous welding without holding the trigger.
4. **Remote Memory Select** allows the welder to change programs (stored parameters) without returning to the power source or feeder.
5. **Purge** purges gas hoses.
6. **Left and Right Gun Triggers**

Rear Panel of Feeder

Volt Sense Lead Connection—This provides accurate voltage feedback for proper operation of the MIG Welding Processes.

Note: The arc will be hotter than typical welding systems at a given setting because the voltage loss in the weld cable is not included in the measurement displayed on the meter.

Additional Accessories

DSS-9 Dual Schedule Switch #071 833
Allows the operator to switch between two sets of parameters during welding to provide consistent penetration in the fixed position or change parameter between passes in roll welding applications.

RPBS-14 Remote Control
#300 666
Attaches to the TIG torch to remotely start and stop the TIG welding process.

Wire Reel Assembly
#108 008
For 60 lb (27 kg) coil of wire.

Reel Covers — for 60 lb (27 kg) coils
#195 412 For single or left side of dual feeder
#091 668 For right side of dual feeder
Protects electrode wire from dust and contaminants. For 60 lb (27 kg) coil of wire.

Spool Covers—12 in (305 mm) diameter spools
#057 607 For single or left side of dual feeder
#090 389 For right side of dual feeder
Protects electrode wire from dust and contaminants.

Welding Process Capabilities

The PipeWorx™ Welding System provides standard welding process programs (detailed in the table below), specifically designed for the welding of carbon steel and stainless steel pipe. The MIG-Modified Short Circuit (RMD™) Programs and Pro-Pulse™ MIG Programs are synergic programs designed specifically for combinations of wire type, wire diameter and shielding gas.

The power source is shipped with typical weld parameters for pipe welding. There is a means to reset the power source back to the typical weld conditions (factory settings). Synergic welding programs can only be adjusted within a range of acceptable wire feed speed to prevent operation in an unstable arc condition. This promotes weld quality and simplifies set-up.

Welding Process	Metal Transfer	Material Type	Wire Diameter	Shielding Gas
Stick (SMAW)	—	—	—	—
HF TIG (GTAW)	—	—	—	—
Lift-Arc™ TIG (GTAW)	—	—	—	—
MIG (GMAW)	Short Circuit or Spray	Carbon Steel	.035 or .045	C8-C15 (Argon/8-15% CO_2) C20-C25 (Argon/20-25% CO_2) 100% CO_2 Others
MIG (GMAW)	Short Circuit or Spray	Stainless Steel	.035 or .045	C2 (Argon/2% CO_2) 98/2 Ox (Argon/2% O_2) TriH (90% He/7.5% Ar/2.5% CO_2) Others
MIG RMD (GMAW)	Modified Short Circuit	Carbon Steel	.035 or .045	C8-C15 (Argon/8-15% CO_2) C20-C25 (Argon/20-25% CO_2) 100% CO_2
MIG RMD (GMAW)	Modified Short Circuit	Stainless Steel	.035 or .045	C2 (Argon/2% CO_2) 98/2 Ox (Argon/2% O_2) TriH (90% He/7.5% Ar/2.5% CO_2)
MIG (GMAW)	Pro-Pulse	Carbon Steel	.035 or .045	C8-C15 (Argon/8-15% CO_2)
MIG (GMAW)	Pro-Pulse	Stainless Steel	.035 or .045	C2 (Argon/2% CO_2) 98/2 Ox (Argon/2% O_2) TriH (90% He/7.5% Ar/2.5% CO_2) TriA (81% Ar/18% He/1% CO_2)
Flux Cored (FCAW)	—	—	—	No Requirement

Other non-standard programs are optionally available for unique welding applications. These programs are available on commercial memory cards and operate through the PipeWorx Card Reader on the operator interface. Contact Miller for more information on less common materials and gases.

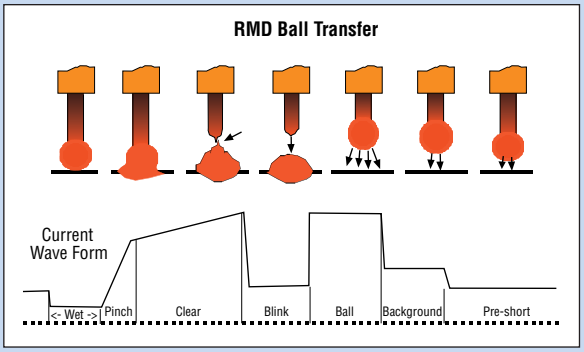
PipeWorx Memory Card

#300 538 **Blank Card —** Used to store weld programs
#300 596 **System Software, Version 1.06 —** For free download, visit MillerWelds.com
#300 557 **Calibration —** Used to calibrate the PipeWorx System. For free download, visit MillerWelds.com
#300 536 **Inconel —** Pro Pulse .045 inch diameter wire, 75% Argon/25% Helium
#300 675 Carbon Steel, RMD, **.052 in diameter wire** with 75% Argon/25% CO_2
#300 460 **Range Locks —** Provides ability to set nominal parameter values and ranges for wire feed processes.

Improved Arc Performance

RMD™ (Regulated Metal Deposition)

A precisely controlled short-circuit metal transfer that provides a calm, stable arc and weld puddle. This provides less chance of cold lap or lack of fusion, less spatter and a higher quality root pass on pipe. The stability of the weld process lessens the puddle manipulation required by the welder and is more tolerant to hi-lo conditions, reducing training requirements. Weld bead profiles are thicker than conventional root pass welds which can eliminate the need for a hot pass, improving weld productivity. In some stainless steel applications, it may be possible to eliminate the backing (purge) gas to further improve productivity and reduce welding costs.



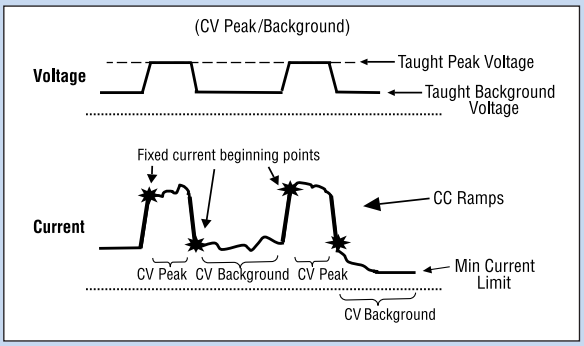
RMD™ Carbon Steel

RMD™ Stainless

- Ideally suited to root pass welding
- Consistent side wall fusion
- Less weld spatter
- Tolerant to hi-lo fit-up conditions
- More tolerant of tip to work distance
- Less welder training time
- Thicker root passes can eliminate hot pass
- Eliminate backing gas on some stainless steel applications

Pro-Pulse™

This method of pulse welding provides a shorter arc length, narrower arc cone and less heat input than with traditional spray pulse transfer. Since the process is synergic, arc wandering and variations in tip-to-work distances are virtually eliminated. This provides easier puddle control for both in-position and out-of position welding, reducing welder training time. The process also improves fusion and fill at the toe of the weld, permitting higher travel speeds and higher deposition. This process coupled with RMD Pro for root pass welding permits welding procedures with one wire and one gas to eliminate process switch-over time.



Pro-Pulse Carbon

Pro-Pulse Stainless

- Ideally suited to fill and cap pass welding
- Easier puddle control than conventional spray pulse
- Shorter arc lengths and narrow arc cone for out-of-position welding
- More tolerant of tip to work variation
- Improve fusion and fill at toe of weld
- Less heat input reduces interpass cooling time and improves weld cycle time
- Enables one-wire with one-gas weld procedures

PipeWorx™ Welding System Specifications (Subject to change without notice.)

PipeWorx Power Source

Welding Mode	Rated Output at 100% Duty Cycle	Amperage/ Voltage Range	Amps Input at Rated Output, 60 Hz, 3-Phase 230 V	460 V	575 V	KVA	KW	Max. Open-Circuit Voltage	Dimensions	Weight
CC: Stick	350 A at 34 VDC	40 – 350 A	36.8	22.5	18.9	**230 V** 14.8 **460 V** 18.0 **575 V** 19.0	**230 V** 13.7 **460 V** 13.7 **575 V** 13.8	90	H: 28 in (711 mm) W: 19-1/2 in (495 mm) D: 31-3/4 in (806 mm)	225 lb (102 kg)
CC: DC TIG	350 A at 34 VDC	10 – 350 A								
CV: MIG/ Flux Cored	400 A at 44 VDC	10 – 44 V	53.6	31.1	26	**230 V** 21.5 **460 V** 24.7 **575 V** 25.9	**230 V** 20.0 **460 V** 19.9 **575 V** 19.7			

PipeWorx Single and Dual Feeders

Input Power	Wire Feed Speed Range	Wire Diameter Capacity	Input Welding Circuit Rating	Maximum Spool Size Capacity	Dimensions Single	Dual	Net Weight Single	Dual
24 VAC, 11 Amps	50 – 780 IPM (1.3 – 19.8 MPM)	.035 – .062 in (0.9 – 1.6 mm)	100 Volts, 750 Amps, 100% Duty Cycle	60 lb (27 kg)	H: 14 in (356 mm) W: 19 in (483 mm) D: 29 in (737 mm)	H: 14 in (356 mm) W: 19 in (483 mm) D: 29 in (737 mm)	65 lb (29.5 kg)	90 lb (41 kg)

Feeder Drive Roll Kits (Order from Miller Service Parts.)

Select drive roll kits from chart below according to type and wire size being used. Drive roll kits include 4 drive rolls, the necessary guides and feature an anti-wear sleeve for the inlet guide.

Wire size	"V" groove for hard wire	"V" knurled for hard-shelled cored wires
.035 in (0.9 mm)	**#151 026**	**#151 052**
.040 in (1.0 mm)	**#161 190**	—
.045 in (1.1/1.2 mm)	**#151 027**	**#151 053**
.052 in (1.3/1.4 mm)	**#151 028**	**#151 054**
1/16 in (1.6 mm)	**#151 029**	**#151 055**
.068/.072 in (1.8 mm)	—	**#151 056**
5/64 in (2.0 mm)	—	**#151 057**
3/32 in (2.4 mm)	—	**#151 058**

Wire Guides

Wire size	Inlet Guide	Intermediate Guide
.023 – .040 in (0.6 – 1.0 mm)	**#150 993**	**#149 518**
.045 – .052 in (1.1 – 1.4 mm)	**#150 994**	**#149 519**
1/16 – 5/64 in (1.6 – 2.0 mm)	**#150 995**	**#149 520**
3/32 – 7/64 in (2.4 – 2.8 mm)	**#150 996**	**#149 521**

Typical PipeWorx™ Welding Systems (Filler metal and shielding gas sold separately.)

Air-Cooled System

PipeWorx Welding System Package **(#951 131)** includes power source (with cable hangers), running gear and handles, dual feeder, cable kit with 25 ft (7.6 m) work sense lead, and PipeWorx 250 and 300 guns.

Air-Cooled with Remote Feeder System

System is shown with power source **(#907 382)**, running gear **(#300 368)**, dual feeder **(#300 366)**, 25 ft composite cable **(#300 454)**, feeder cart **(#300 467)**, 250 amp gun **(#195 399)**, 300 amp gun **(#195 400)**, remote foot control **(#194 744)**, regulator/flowmeters **(#194 738)** and TIG torch **(WP1725RM** with **105Z57** adapter**)**.

Water-Cooled System

System is shown with PipeWorx Welding System Package **(#951 131)**, PipeWorx cooler **(#300 370)** for MIG or TIG Welding (removable for service and repair), remote foot control **(#194 744)**, regulator/flowmeters **(#194 738)** and TIG torch **(WP1825RM** with **45V11** adapter**)**.