



Heavy Equipment



WELDING SOLUTIONS



Leading the Way in Welding Productivity... Across the Globe

Choosing the right partner brings many long-term rewards. By providing integrated solutions, the ITW Welding companies are uniquely able to provide our partner customers with several vital benefits, including:

Trusted partnership

Your goals are our goals. Your success is our success. We are your trusted partner who stands ready to help you achieve your welding and fabrication objectives.

Greater productivity

Leveraging your investment in people and equipment is one key to sustaining success. Let our people and products help you maximize your productivity.

Cost reduction

In today's global arena, cost containment is essential for long-term success. Our people and products will help you reduce costs and remain competitive.

Higher quality

We can show you ways to reduce mistakes and defects in your weld and fabrication manufacturing operation, because the cost of poor quality can be significant.

Innovation

At the core of all of our products is innovation. Our designs deliver tangible benefits not found in competing products.



Standardization

We are located where you are. Our global reach enables us to support you in your goal to standardize your manufacturing processes around the world.

Safety

Our products help you create a safe work environment, from personal protective equipment to improved air quality.

Single source solution

With our power sources, filler metals, guns and fume extraction products working together through innovative technology, the result is a total welding solution from a single source you can rely on.

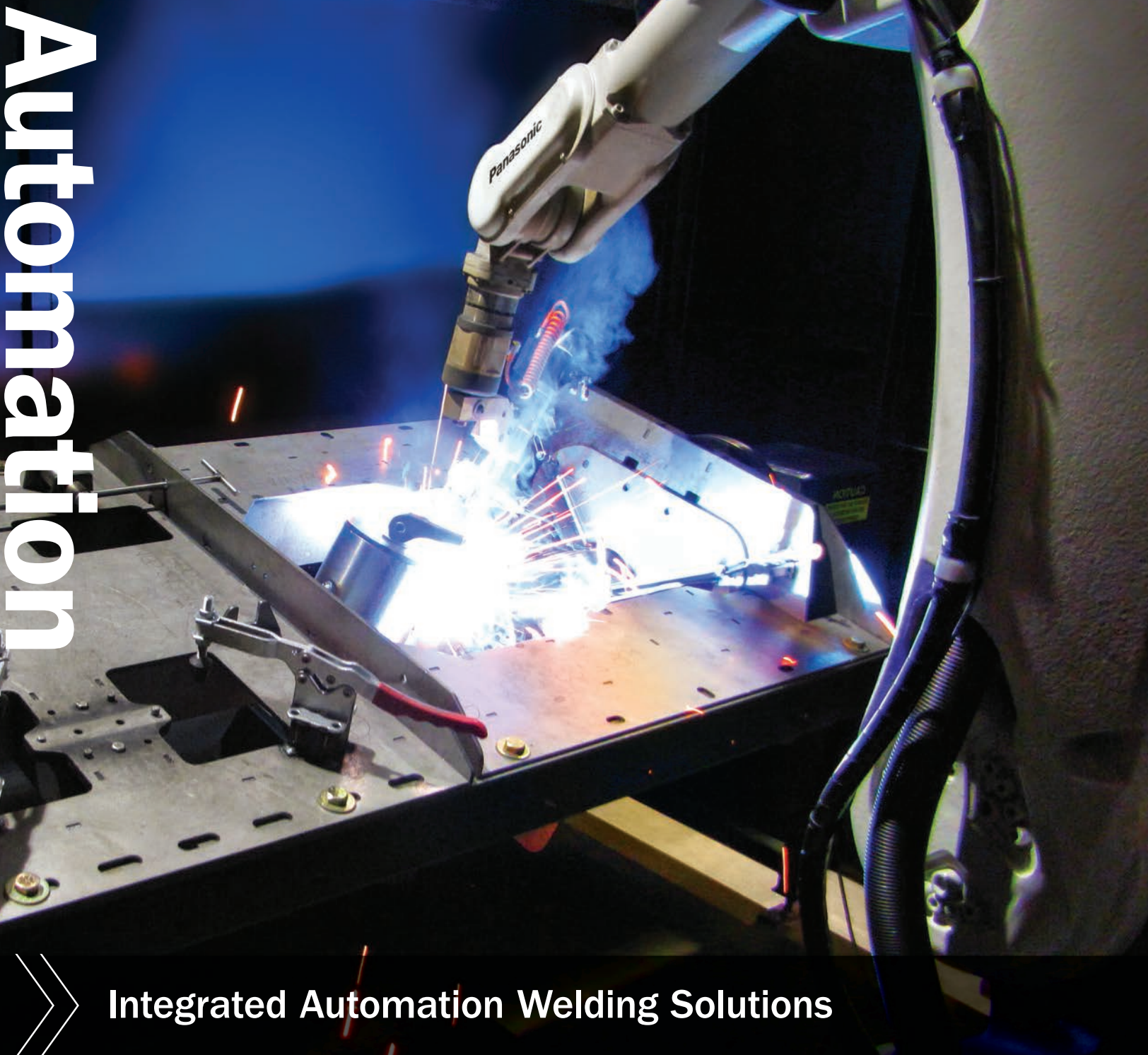


Countless capabilities. Trusted advice. Integrated solutions.

Across the globe, heavy equipment manufacturers place their trust in the ITW Welding companies. Miller, Hobart Brothers, Bernard, Smith Equipment and Tregaskiss all work together to create a comprehensive welding solution. Whatever your need, look to us. Together, we'll develop a world-class, integrated solution to help you achieve your manufacturing goals.

ITW Welding





Automation

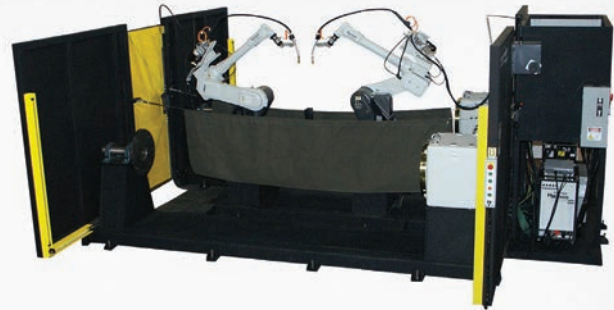
Integrated Automation Welding Solutions

Our pre-engineered welding solutions eliminate variation and deliver reliable, repeatable results for every part you make. Working as your partner, we'll couple the advanced Miller® technology found in our welding power sources with some of the most advanced automation equipment on the market — dual robotic systems, welding and heavy plate robotics, fume extraction and digital monitoring. For a complete solution, add high quality Hobart Brothers filler metal and Tregaskiss water-cooled MIG guns.

PerformArc™ Pre-Engineered Robotic Welding Systems

These systems incorporate automation robots, servo high-speed turntables/positioners and Miller welding technology. Their innovative heavy plate programs and dual robot configurations make them ideal for heavy applications. They provide full-system robotic control, diagnostics and programming in one easy-to-access location.

- **Flexibility** — pre-wired and pre-assembled for fast installation and easy relocation
- **Safety compliance** — meets rigorous safety standards with fully integrated safety environment including light curtains and door interlocks
- **Excellent service** — pre-engineered and backed by 24-hour support from Miller



Models include PerformArc 1100HW, PerformArc 1100SS and PerformArc 2200SS (shown)

FILTAIR® Automation Hood

Designed for use with the PerformArc Robotic Welding System, this hood provides the precise cubic feet per minute (cfm) of airflow needed to clear the air in each weld cell.

- **Easily integrated** with FILTAIR Industrial Centralized system for complete fume extraction package
- **Innovative design** — lightweight and conserves floor space
- **Concentrated extraction zone** captures fumes directly over the robot



TA/TB¹ G3/WG Welding Robots

Fully integrated with heavy plate software and your choice of TAWERS™ or Auto-Access® technology, these robotic manipulators are easy to operate and offer unlimited flexibility.

- **Up to 1,900 mm reach** (TA-1900) or 1,800 mm reach (TA/TB-1800)
- **Payload capacity** of up to 8 kilograms
- **Teach pendant** runs on Microsoft Windows CE and uses common computer commands to speed up training
- **Advanced sensitivity** detects undue load and drops servo power to protect the robot from collisions
- **Adaptive fill capability** repeats a weld pattern while adapting to the changing part
- **Safety compliant** for RIA, UL and c-UL



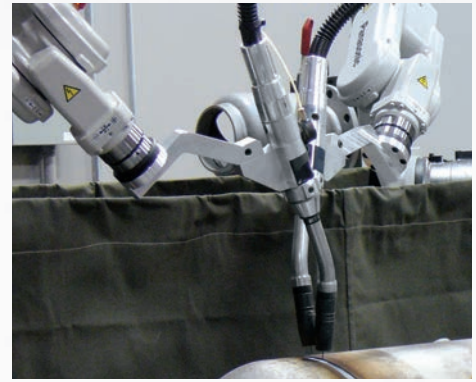
Models available include TA/TB-1800 G3/WG and TA-1900G3/WG (shown)

¹TA = Traditional robot; TB = Through-arm technology

Heavy plate robotic welding package

TAWERS™ Embedded Arc Control technology provides synchronous and instantaneous control of wire feed, welding parameters and robotic motion through these single-control systems.

- **600-volt touch sense** — with ability to punch through heavy mill scale and primer
- **Adaptive weaving** senses the edges of weld joint, adjusts amplitude point and welding travel speed based upon the changing weaving amplitude
- **Multi-pass software** repeats pattern while adapting to changing part
- **Root pass memorization**
- **Visual macros** — for easy programming — a Miller exclusive
- **Synchronized dual robot technology** maximizes deposition and overall productivity



Auto-Access® Multi-MIG® Robotic Systems

Reduce the complexity of pulsed MIG robotic welding with the digital controls and the robotic interface of the Auto-Access inverter-based welding platform. Through software-based programs, these multi-MIG systems bring the many benefits of digital controls to manufacturers who use either an analog or digital robot platform.

- **Accu-Pulse®** — patented pulsed MIG process providing precise arc control while being highly adaptive and forgiving
- **Auto-Line™** — power management technology for consistent welding performance even during fluctuations in primary power
- **Fan-On-Demand™ Cooling System** — conserves energy, runs only when needed
- **Auto-CAL** — patented automatic calibration feature for fast setup
- **Available** in 300, 450 and 675 amp versions (100% duty cycle)



Compatible with most popular robot brands

Auto-Access E with Insight™

The Auto-Access E combines the features and capabilities of the standard Auto-Access with the powerful Insight monitoring system. Insight can help detect potential defects as well as provide critical productivity information for your weld cell.

- **Monitor** current, voltage, wire-feed speed, gas flow (optional) and duration on a weld-by-weld basis
- **Improve the welding process**, reduce defects and generally make your automation cell as productive as possible
- **Track** quality- and productivity-related information via Insight Reporter



Compatible with most popular robot brands

Automation filler metal

Tri-Mark® Matrix™ metal-cored wire from Hobart Brothers delivers unrivaled performance in high-volume, robotic welding applications resulting in unsurpassed arc starting and wire feeding, as well as excellent seam tracking and touch sensing.

- **Superior feedability** — reduces replacement costs for parts/accessories
- **Silicon control technology** — reduces post-weld cleanup
- **High deposition rates** — improves productivity compared to solid wires
- **Consistent weld beads** and reliable crack resistance



Tregaskiss TOUGH GUN™ Robotic Water-Cooled MIG Gun

With its rugged design, this water-cooled, 600-amp robotic MIG gun with aluminum-armored gooseneck, maximizes high-volume production when welding thick plate or running prolonged duty cycles within a robotic cell.

- **Stainless steel docking body** — stands up to the rigors of robotic production
- **Independently swiveling conduit** — rigidly supports the liner for smooth wire feeding
- **Maintenance-friendly design** — easily accessible front housing and quick-change fittings



Semi-automatic



Rugged, Reliable Products with Innovative Features Drive Semi-automatic Welding Productivity and Quality

We understand the challenges and concerns of heavy equipment manufacturers. First-time quality leads to lower overall costs and increased throughput. Our goal is to help your operators make that happen, for every part you make, in every phase of your semi-automatic welding processes. You can build your own industrial system easily using the Equip to Weld tool on our website. Visit MillerWelds.com/products/equiptoweld/ to learn more.

Access® Multi-Mig® Welding Systems

The Access Welding System is the premier welding solution for heavy equipment manufacturers. This proven design provides the capability and flexibility to meet a broad variety of manufacturing needs — from standard MIG through the widely acclaimed Accu-Pulse® process. Its multi-MIG process capability provides customized pulse welding technologies that can improve finished product quality while shortening production cycle times.

- **Vast library of programs** cover a wide range of processes, wire types/sizes and gas types
- **Patented Accu-Pulse process** is the standard for production pulse welding and is highly adaptive and forgiving — allows for precise control of the pulse arc and provides optimum molten puddle control
- **Increase deposition rates 20-25%** with Accu-Pulse
- **Available** in 300, 450 and 675 amp versions (100% duty cycle)



Access E with Insight™

Add the power of the Insight weld monitoring system to the proven benefits of the Access Multi-MIG Welding System. Don't just monitor production data; use Insight to provide information that creates the knowledge to improve your welding operation on many levels. When combined with the power of Ethernet connectivity, Access E with Insight provides a comprehensive welding information system.

- **Govern the fabrication process** via a visual HMI for the operator
- **Detect potential defects** by comparing welds to upper and lower limits for five different criteria, alerting operator to welds outside of those ranges
- **Detect under/over welding**
- **Monitor productivity information** like arc-on time, wire consumed, parts completed and more
- **Track reasons for weld cell downtime**
- **Insight Reporter™** provides preconfigured reports focused on productivity and quality
- **Upgrade existing Access systems** to Access E capabilities



Deltaweld® 452/652 Welding System with 70 Series Bench Feeder

These simple MIG-only machines provide rock-solid reliability, exceptional value and excellent power efficiency. Combined with the 70 Series wire feeder, these are the MIG solutions of choice for the most demanding industrial welding market, providing 450 and 650 amps respectively.

- **Simple, durable and rugged**
- **Fan-on-Demand™ cooling** conserves electricity; runs only when needed
- **Digital meters** ensure repeatability through preset welding parameters and easy monitoring of the voltage and amperage
- **Three feeder types available** — standard, digital and deluxe
- **Single or dual feeder options** available



Invision™ 450 MPa

This MIG and Pulsed MIG inverter machine delivers 450 amps output at 100 percent duty cycle. With more robust pulsing power and higher amp output, it's ideal for the thick materials and long weldments found in heavy equipment fabrication.

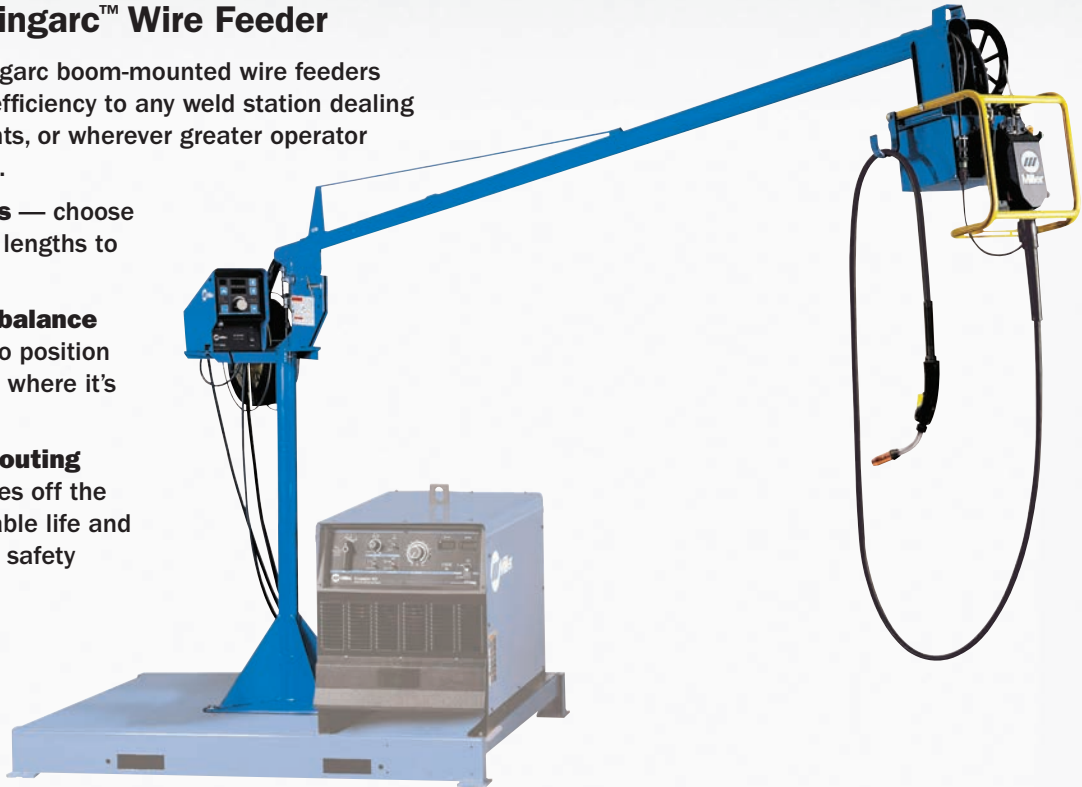
- **Pulsed MIG programs** — designed with built-in, synergic-capable pulsed MIG programs
- **Pulsed programs** for .052 in. and 1/16 in. wires
- **115 V auxiliary power** — adds flexibility when using hand tools or water-cooled systems
- **Optimized** for 74 MPa plus feeders



70 Series Swingarc™ Wire Feeder

The 70 Series Swingarc boom-mounted wire feeders add flexibility and efficiency to any weld station dealing with large weldments, or wherever greater operator mobility is required.

- **Multiple options** — choose 8-, 12- or 16-foot lengths to maximize output
- **Unique counterbalance design** — easy to position the boom exactly where it's needed
- **In-boom cable routing** — helps get cables off the floor to extend cable life and improve operator safety



Induction Heat Treatment Systems

Induction heating offers many key advantages for heavy equipment manufacturing, maintenance and repair. Unlike other methods of heating, the Pro-Heat has the ability to control heating rates as well as desired target temperatures during the weld process. As a result, the joint achieves the required strength and hardness, and risks of weld cracking are minimized when welding on very heavy steel components.

- **Faster cycle times** — Induction heating brings the steel to temperature in minutes rather than hours — far faster than with propane or resistive heating.
- **Maintains the desired temperature** without having to stop welding to add more heat (as with flame heating).
- **Provides uniform heating** throughout the entire weld zone.
- **Safe and cost efficient** — Eliminate operator exposure to open flames, explosive gases and hot heating elements involved with other methods.
- **Reduced labor time, less rework and lower gas usage** saves operating costs.
- **Better weld quality** — Welds made with induction heating consistently achieve their required strength and hardness, minimizing the risk of hydrogen cracking.



For more details on Pro-Heat 35 induction heating, contact us at 920-735-4001 or e-mail pwpservice@millerwelds.com.

Guns, consumables and parts

A pioneer of welding guns and accessories, Tregaskiss specializes in semi-automatic, automatic and robotic MIG welding guns. Bernard, with more than 60 years' experience as a MIG welding innovator, offers custom-configured MIG guns plus the Dura-Flux™ premier flux-cored guns and the revolutionary Centerfire™ Series of MIG nozzles, tips and diffusers. Together, Tregaskiss and Bernard offer a complete solution of MIG guns, consumables and other components designed to maximize your welding productivity and improve weld quality.

Bernard® Q-Gun™ and S-Gun™ MIG Guns (air-cooled)

The Bernard air-cooled MIG gun configurator allows for the precise customization of the right Q-Gun or S-Gun for your particular welding job. Guns can be customized for your exact application.

- **Lightweight, comfortable handle** and easy-to-change trigger options
- **Necks available in fixed or rotatable models** and in several lengths to improve operator comfort
- **Durable back-end strain relief**, easily interchangeable direct plugs and trigger leads simplify maintenance



Bernard W-Gun™ MIG Gun (water-cooled)

- **Flexible cable assembly** with reinforced synthetic rubber hoses prevents water leakage, increases water flow and reduces gas leakage
- **Heavy-duty, water-cooled necks** in multiple lengths and bend configurations improve joint accessibility and operator comfort
- **Uniquely designed housing** with water cable strain relief reduces chance of kinking



Bernard Centerfire™ Consumables

- **“Drop-In” contact tips** are non-threaded and stay in place by hand-tightening the nozzle, allowing for quick changeover after burnbacks — no tools required for replacement
- **Centerfire nozzles** feature built-in spatter shield for smoother, less turbulent gas flow
- **Threaded nozzle** holds tip fixed at .25 in. or .125 in. recess, flush or .125 in. stick out



Bernard Quik Tip™ Consumables

- **Threaded taper lock** increases tip life by providing excellent heat transfer and electrical conductivity
- **Require only a quick twist** to install or change over
- **Gas diffusers have positive stops** to secure each Quik Tip in a fixed position for superior repeatability and consistent, quality welds



Tregaskiss™ TOUGH GUN™ Semi-Automatic Air-Cooled MIG Guns

This MIG gun line from Tregaskiss is designed for durability in the harshest, most demanding, industrial welding environments.

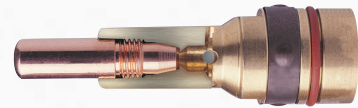
- **Double-Life gun system** extends the life of your MIG gun — once the front end is worn, just flip-flop the front and back ends of the MIG gun
- **Consumable system** includes contact tips, nozzles and retaining heads designed to run cooler, last longer and provide consistent welding performance
- **Lifetime warranty** on handle and switches



Tregaskiss TOUGH LOCK™ Consumable System

Achieve the improved performance and reliability you need by making consumable changes less frequently.

- **Dual-lead thread design** allows tips to be rotated 180° to a new wear position for extended tip life
- **Greater surface area** between the high-conductivity/high-tolerance contact tip, retaining head and gooseneck ensures positive electrical conductivity, cooler operation and extended life
- **Dual Taper Technology** on retaining heads locks the front-end consumables from tip to neck to prevent overheating

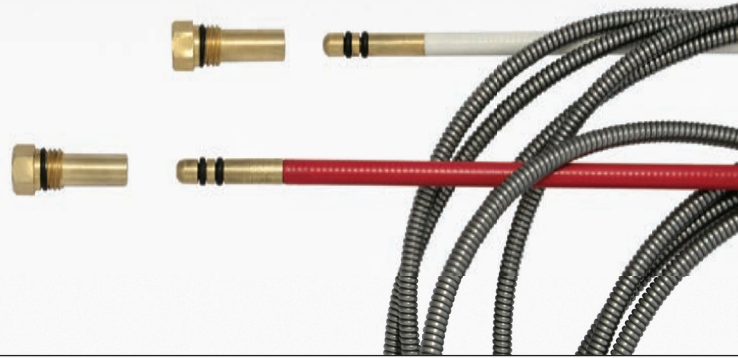


NOTE: As part of the Common Consumable Platform, TOUGH GUN Semi-Automatic and Robotic MIG Guns use the same Tregaskiss consumables, resulting in less overall inventory.

Tregaskiss™ QUICK LOAD™ Liners

These revolutionary front-loading liners from Tregaskiss require significantly less time and effort to replace compared to conventional liners.

- **Two-piece design** has the retainer installed inside the power pin on first use — there's no need to cut and waste wire
- **Eliminates the need to climb up** to change liners in semi-automatic guns connected to boom-mounted feeders



Tregaskiss™ Nozzles

- **Brass insert in nozzles** maintains inner diameter and prevents rocking of the nozzle
- **High-temperature-resistant fiberglass insulator** electrically insulates the nozzle from the diffuser to help extend nozzle life
- **Common Consumables Platform** means nozzles can be shared across all air-cooled Tregaskiss Semi-Automatic and Robotic MIG Guns



Capture all the advantages of metal-cored wire

In many high-strength industrial applications, metal-cored wire can improve weld quality, reduce non-value-added activities and increase productivity — especially compared to solid wires. Other advantages include:

- **Increased deposition rates** and faster travel speeds with little to no spatter
- **Reductions in post-weld cleanup** time and labor costs
- **Greater tolerance** to variations in the welding process, which cuts the costs of part rejection and rework
- **Reduces the risk** of hydrogen cracking
- **Lowers the heat input required**, reducing part distortion or eliminating pre-weld operations

Tri-Mark® Metalloy® 76

This gas-shielded wire is ideal when the application calls for flat or horizontal welds on carbon steel. Its higher deoxidization elements provide it with more tolerance for welding on steel with mill scale.

- **Offers a low diffusible hydrogen weld deposit** to help mitigate cracking
- **Low spatter levels** minimize cleanup



Tri-Mark® Metalloy® Vantage™

The superior “wetting” characteristics of this wire produce an aesthetically pleasing weld profile with more uniform weld fusion and penetration.

- **Silicon control technology** pulls silicon out of the toes of the weld to expedite post weld cleanup
- **Significantly less spatter**, which can reduce or eliminate post-weld cleanup time
- **High deposition rates** and travel speed increase productivity



Flux-cored wire

Hobart® Excel Arc 71™ Flux-Cored Wire

Featuring excellent arc stability, easy slag removal and good bead shape, this wire can be used both in-position and out-of-position when parts are not easily configured for flat or horizontal welding.

- **Low hydrogen weld deposit** to help resist cracking
- **Best-in-class operability**, slag removal and bead shape on both single- and multi-pass applications
- **Low spatter levels** to expedite post-weld cleanup



Hobart® FabCO® 85

Designed for use where deposit quality and properties are of a first concern, FabCO 85 is more crack resistant than the acid slag types of wires because the weld metal hydrogens are very low.

- **Ideal for single- and multiple-pass applications** with CO₂ and or argon/CO₂ gas shielding
- **Excellent low temperature** impact strengths



Environmental

Solutions for a Cleaner, Healthy Working Environment

An investment in a healthier work environment helps attract and retain skilled workers, quickly improves productivity and helps comply with regulations. You'll breathe easier when you select reliable solutions designed expressly for the unique needs of the industrial welding environment.

Clear the air with the Miller® FILTAIR® lineup of fume extractors — including pre-engineered systems designed to capture, filter and extract heavy industrial welding fumes in any size facility. Create a total environmental solution from the ITW Welding companies with all the high quality products you'll need:

- Reduced emissions metal-cored wire
- Source-capture fume guns
- Personal air-purifying headgear

Tri-Mark® Metalloy® 70X

This metal-cored wire from Hobart Brothers has lower fume generation rates than other metal-cored wires. Offering the lowest spatter level of all the Tri-Mark metal-cored wires, this wire improves the workplace environment.

- **Reduces welding emissions** for improved operator comfort
- **Excellent arc characteristics**
- **Better wetting action** than solid wire, which helps minimize cold lap



FILTAIR® Centralized Industrial Weld Fume Extraction Series

Each fume extraction model moves large volumes of air at low velocity and low pressure. They're clean, compact and cost efficient — making FILTAIR an ideal solution for heavy industrial applications.

- **65% smaller footprint** — conserves valuable plant floor space with a more compact design than traditional cartridge units
- **Superior suction power** — ensures long-lasting airflow
- **Five base models** — ranging from 2,000 to 12,000 cubic feet per minute (cfm), units can be combined to meet your specific cfm needs
- **FilTek™ XL filter technology** — revolutionary surface-loaded nanofiber filter media captures even the smallest dust and weld fume particle on the filter's outside surface



FILTAIR® 400 High Vacuum System

This system utilizes strong suction power and a low volume of air to capture weld fumes at the weld source in industrial welding environments.

- **Energy efficiency** is maximized by the circulation of air — no heating or cooling required
- **Automatic start/stop** feature ensures reliable fume capture only when you need it



Bernard® Clean Air Gun™

This fume extraction gun helps create an efficient environment with reduced smoke and fumes — even on harsh welding applications.

- **Maximizes suction** without affecting shielding gas
- **Compatible with Centerfire™ Series** consumables
- **400 and 600 amp** configurations
- **Chrome parts** to resist spatter adhesion



Powered Air Purifying Respirator (PAPR) units

PAPR units provide personalized respiratory protection and a clean-air breathing zone for individual welding operators.

- **Lightweight design** to reduce fatigue
- **Comfortable** with combo belt/shoulder strap system
- **Dual air speeds** to match a variety of working conditions



Maximize operator protection and comfort

Miller is redefining welder protection with products that provide optimal fit, comfort, performance and style resulting in safer, more productive work environments. That's the Arc Armor® difference.

CoolBand™ and CoolBelt™ Heat Stress Cooling Systems

Don't let heat exhaustion cause unnecessary injuries on the job — let the CoolBand or CoolBelt lower temperatures underneath the hood. Easily integrated into most Miller® helmets, both models provide air movement over the face and head, removing stagnant air and decreasing lens fog. CoolBand headgear provides temperatures up to 8° F cooler compared to the surrounding workplace air, while the CoolBelt belt-mounted device delivers the maximum air flow performance of up to 17° F cooler.

- **Keeps employees cool on the job**
- **Reduces fatigue**
- **Increases worker productivity**



CoolBand



CoolBelt

9400i Titanium Series™ Helmets

This helmet from Miller matches the rugged demands of industrial welding environments and meets the ANSI high-impact standards. It includes an innovative aluminum heat shield that protects the analog lens in high-amperage applications.

- **Auto-darkening lens** flips up or down and integrates with a separate, clear grinding shield
- **Convenient quick release** for front cover lens changes
- **Excellent skin coverage** and lightweight for extended wear
- **Reflects heat** to keep the helmet and user cool



WeldX™ Industrial Welding Apparel

By infusing a lightweight base fabric with a proprietary compound, Miller created a material that's extremely flame-resistant. It also has the ability to repel sparks, spatter and other molten metals on jackets, cape sleeves, bibs, sleeves and aprons.

- **Doesn't burn, melt, ignite or shrink**
- **Optimal protection and comfort** with 7 oz. WeldX front and sleeves combined with flame-resistant navy cotton back
- **Machine washable** and features a chromium-free alternative for easy disposal



Industrial Gloves

Make these gloves your choice to endure the long-term, repetitive use typical of manufacturing and fabrication welding applications. With a new level of comfort unmatched by conventional welding gloves, Miller gloves provide the necessary protection and dexterity that welding demands. Four styles are available:

- **Heavy duty MIG/Stick**
- **MIG with an extended cuff**
- **MIG pre-curved form-fitting**
- **TIG unlined pigskin leather palm**



Hobart Institute of Welding Technology

Your partner for training, continuing education and certification in welding

Hobart Institute of Welding Technology is recognized as the premier welding institute worldwide. We offer "Welder Training at Your Place or Ours" and "Customized Welder Training and Certification" services, with technical training in the following areas:

- **Preparation for the Certified Welding Inspector (CWI) exam**
- **Preparation for the Certified Welding Supervisor (CWS) exam**
- **Arc welding inspection and quality control**
- **Welding for the non-welder**



HOBART INSTITUTE
OF WELDING TECHNOLOGY

Backed by professional resources in training curriculum, Hobart Institute of Welding Technology is your single source for training, continuing education and certification in welding.

- **Skilled and specialized training**
- **Technical training**
- **Training curriculum**
- **E-based courses**

Visit www.welding.org to learn more!



Hobart Institute of Welding Technology is a 501 (c) 3 nonprofit institution, accredited by the State Board of Career Colleges and Schools Registration No. 70-12-0064HT and by the Accrediting Commission of Career Schools and Colleges No. 000403.

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Countless capabilities. Trusted advice. Integrated solutions.

Meet the challenges of heavy equipment welding quality and productivity with the right partner — the ITW Welding companies. Miller, Hobart Brothers, Bernard, Smith Equipment and Tregaskiss work together to create a comprehensive welding solution for your unique applications. Across the globe, ITW Welding companies will bring countless capabilities, trusted advice and integrated solutions to help you achieve your manufacturing goals.

ITW Welding



MillerWelds.com



HobartBrothers.com