AdaptARC®

ORBITAL WELDING SYSTEMS

TRI TOOL
BUILDING PERFORMANCE

AdaptARC is the most versatile, high-performance system available for dependable, quality welds.

AdaptARC multi-process orbital welding equipment performing ultra high deposition welds for an Oil & Gas Project. Two tandem weld heads were run simultaneously, laying a total of 160 to 240 lbs. of 1/16" filler wire per day.

"...the welding process we're using was developed by Tri Tool in conjunction with Sauer especially for this project. Utilizing that method, we've been able to not only cut costs, but also make sure the schedule's been maintained."
Brian Stahovec, Project Superintendant - Sauer Group

"...the non-destructive testing companies said that they've never seen a film that looked so good after we shot the weld - they're all 100% x-rays."
Dave Kretin, Project Manager - Sauer Group

AdaptARC®

You're in total control with welding equipment that features dynamic configuration options...

- **Degree, Time, and Distance Programming**
- **Precision, User Defined Seam Tracking**
- **Two Shielded Gas Inputs**
- **One System with Multiple Processes: GTAW, GMAW-S, GMAW-P, and FCAW**
- **Wire Speeds Up To 700 Inches per Minute**
- **Digital Control for Consistent Accuracy**

AdaptARC offers maximum operator flexibility with unique multi-process configurability that allows you to switch rapidly back and forth between GTAW & GMAW or FCAW with the SAME weld head and power supply.

All of AdaptARC's orbital welding equipment is engineered to deliver the superior precision, control, dependability, and ease-of-use that customers worldwide have come to expect from Tri Tool's excellent portable machine tools.

Work faster with AdaptARC's patented features. For instance, use Seam Tracker to pre-set your desired path by setting reference points and upslope. The torch will follow your path for every bead sequence of the weld.

With wire feed speeds of up to 700 inches per minute, AdaptARC is the perfect solution for your high deposition rate welding applications.

The DualARC weld head can be switched between processes in just minutes!

Save time with Tri Tool's patented Quick Change Torch designed to change over from process to process in a few minutes without removing the head from the track.

Call for more information about the AdaptARC system and discover the Tri Tool® Advantage - for Welding!

The AdaptARC welding system is comprised of the ORBITMASTER weld controller with its remote control pendant, a matching commercial power supply, the DualARC weld head with coolant re-circulator, and guide tracks.

ORBITMASTER®

Advanced, user-friendly programmable controller

The ORBITMASTER controller was designed and built to ensure you achieve a perfect weld every time.

Complete GTAW arc control.

This advanced controller can perform pulsed or non-pulsed GTAW and/or GMAW, as well as FCAW, for maximum selectivity. Switching from GTAW to GMAW ia an easy programmable function. Multiple parameters can be programmed for welding special alloys and precise weld heat input control.

Along with conventional bevel joints, the programmable controller is ideal for non-typical seams including multi-axis (saddle-on) type joints, angles, curvatures, indentations, and protrusion welds.

Automatic guidance capability provides control and position recording along a path (from hundreds of points) for rapid, repeatable precision.

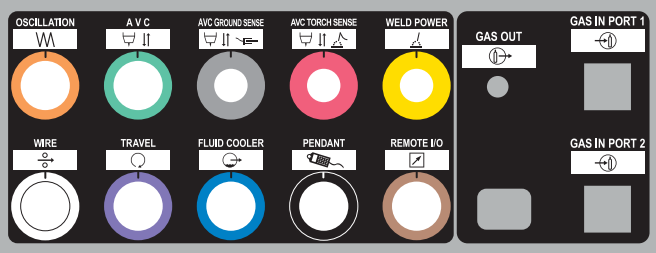
Accurate GMAW metal transfer.

Additional advanced features of the ORBITMASTER controller include automatic tip to work piece distance control in all processes, and programmable control is provided for the torch to work piece Arc Voltage Control (AVC), oscillation, travel, wire feed, coolant recirculation and power source/AVC sensing.

The high performance ORBITMASTER feeds wire up to 700 in/min, especially important if the application requires a huge amount of weld deposition.

- **Multi-Process Control**
- **User Defined Seam Tracking**
- **Dual Inlet Auto-Purge Gas Ports**

Logical, User-Friendly Connections



(Color coordinated hook-up to control cables)

DualARC®

A dynamic weld head for performing both orbital and linear welding

The DualARC weld head's design permits rapid change-over from GTAW to GMAW. Automatic steering control provides precision non-symmetrical weld paths for saddle and other special shapes, as well as automatic rewind and bead placement.

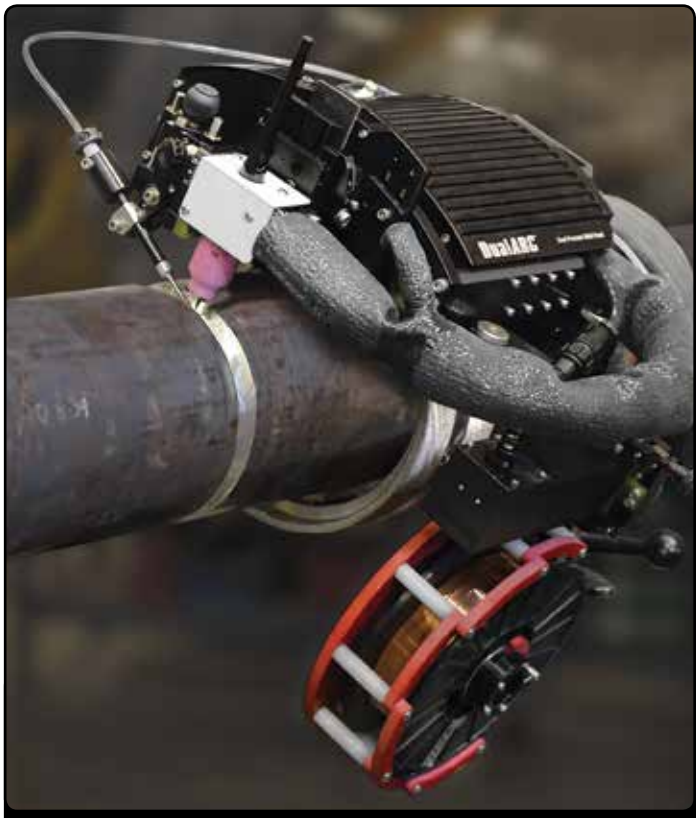
- **Rugged Construction for Accuracy**
- **Rapid Process Switching Without Removing Head From Track**
- **Automatic Steering Control**
- **Auto Rewind and Bead Placement**

The weld head traverses on modular guide tracks for accurate and solid positioning, optimal for narrow groove orbital welding. The weld head is perfectly matched to the ORBITMASTER controller for orbital, linear and overlay welding applications.

The weld head travels up to 100 in/min reducing your weld time significantly when positioning the weld head, rewinding, pre-setting a route, or performing a pass.

The DualARC weld head performing a critical weld on pre-heated pipe in a nuclear power facility on 16" OD X .844" WT (2 1/4 Chrome) - Pre & Post Weld Heat Treat.

GTAW GMAW-S GMAW-P FCAW



Rugged construction for welding precision & repeatable accuracy.

The DualARC has been designed from the ground up for ease of user maintenance with "off the shelf parts" that can be changed in-place with common tools. Rugged construction delivers the precision and repeatable accuracy so critical for the tight tolerances of the orbital welding process.

The DualARC weld head travels up to 100 inches per minute for positioning, rewinding to starting point, or pre-setting a route, reducing your weld time significantly!

ADVANCED TECHNOLOGY

Designed to facilitate every aspect of the welding procedure

Reduce Downtime and Costs with:

- **Nonstop Welding from Root to Cap**
- **Program Chaining and Linking**
- **Reduce E-tech Support**
- **QC Compliance Monitoring**
- **Modification Reference Screens**

AdaptARC's modified short arc for open root welding can eliminate the time consuming hot pass.

Chaining and linking programs together allows the next program to begin at the end of the previous program, for a single combination program that welds the root, hot-pass, fill layers, and cap without stopping.

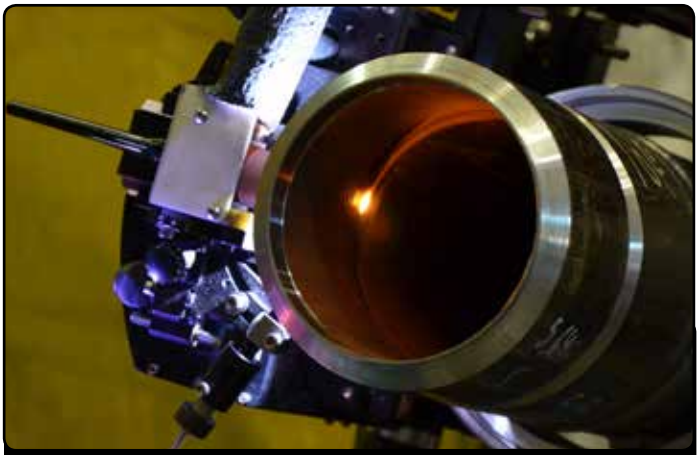
You can also loop programs to allow the same program to repeat multiple times. This is utilized on such beads as the cap, where the same bead characteristics are repeated for a given number of passes.

For reduced E-tech support costs, AdaptARC's fully digital control system eliminates the frequent calibration that is required on competing systems.

The main screen allows for instant evaluation and monitoring of key parameters including heat input.

In addition, the Modifications screen can be saved and printed for QC compliance to the welding procedure specifications.

Should the gas or coolant be reduced or fail, the system will automatically shut down and produce a warning screen on the operator's pendant, eliminating porosity issues due to a low bottle or ruptured coolant lines.



GTAW root pass being performed by the DualARC weld head, seen from the inside.

Dual Inlet Gas Ports: Two gas ports allow automatic port switching, purging the lines during re-wrap, resulting in no lost weld time.

ORBITMASTER delivers superior welding performance and results with unprecedented ease and advantages such as precision seam tracking and waveform generation (GMAW) for reduced spatter and smoke.

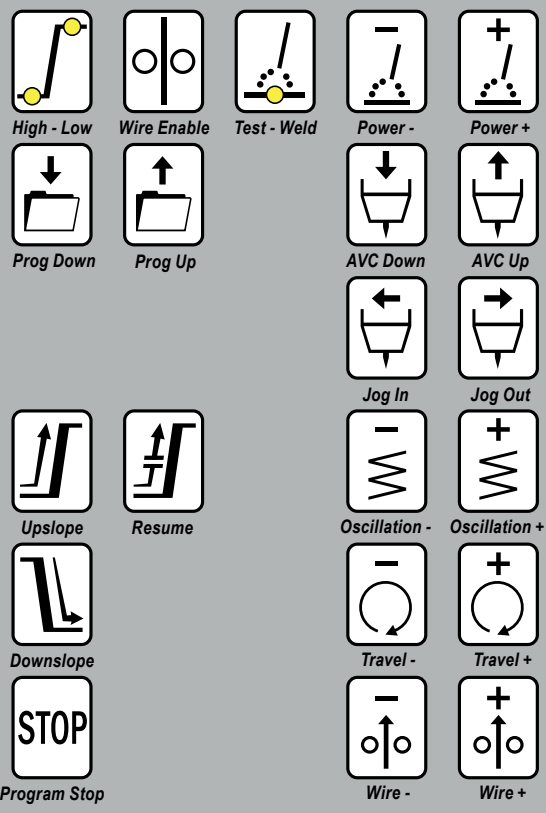
The monitor screen folds down when not in use, protecting it and the keyboard.

WELDER FRIENDLY CONTROL

User friendly program interface designed by and for welders

- **Simple, logical interface screen**
- **Practical, easy, pendant control**
- **Modification reporting screen**
- **QC compliance monitoring**

Pendant Button Function



The Remote Control Pendant buttons (GMAW/FCAW shown) are arranged in a logical pattern for efficiency and grouped by function to permit the operator to remain focussed on the weld process.

AdaptARC weld programming is simple, straightforward and easy to learn. The programming system was designed by welders to include the controls you are familiar with and expect. The AdaptARC console comes pre-loaded with weld programs for a variety of processes, and sizes, or follow the screen prompts to create a new program.

The fully featured remote pendant is one of the smallest and most welder-friendly pendants on the market.

A High-Low switch allows simultaneous switching of primary/background parameters in place of the more conventional operation of switching these parameters separately; this allows half the pendant switches and provides much easier operations.

Small, simple and easy to operate, the AdaptARC control pendant provides total control, allowing the welder to stay focussed completely on the weld.

The "Pendant Setting" console screen allows the operator to customize the pendant functions including the incremental amperage increase/decrease per button depression.

Add individual notes to any program to identify specified details of that program such as who created it, when, what materials, etc.

PORTABLE FILES

TORCH HEIGHT SENSING

USB

Get Maximum Performance with Hot Wire Capabilities

The Hot Wire Kit is an optional accessory designed to expand the capability of the Orbitmaster Weld Console and DualARC Weld Head for GTAW processes.

Cart mounted Hot Wire Power Supply.

The Hot Wire Kit applies an AC current to the weld filler wire as it travels towards the weld puddle, and provides significant benefits and time savings compared to cold wire GTAW processes. Hot Wire GTAW allows for significantly increased filler wire deposition rates, reduction of the heat affected zone through lower arc energy levels, and increased weld pool control during high energy input processes.

The Hot Wire Kit is available as a factory-installed system enhancement available for new weld systems and factory retrofits.

The Hot Wire Kit includes:

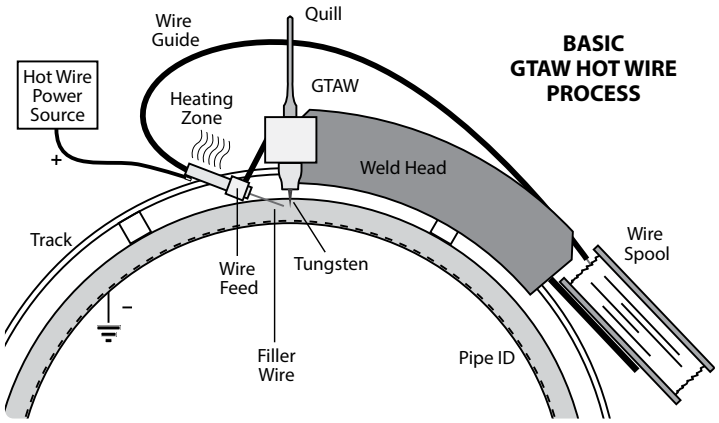
- **A Bi-Directional Wire Feed Kit**
- **Hot Wire Shield Gas Tubing**
- **Hot Wire Quill Assembly**
- **Hot Wire Power Supply (and all connections)**
- **Hot Wire AC Drive Unit**
- **Hot Wire Controller PC Board**
- **Hot Wire Power Cabling**
- **Wire Straightener Kit (wire feeder mounted)**
- **Hot Wire Operator Manual**
- **Factory Installation and Testing**

The Hot Wire AC Drive Unit and Controller PC Board mounts into the Orbitmaster Weld Control Console. The Hot Wire Power Supply is a standalone unit adjacent to the weld console and connects the console to the Hot Wire Quill Assembly with dedicated power cabling.

The Hot Wire unit heats the filler wire just before it emerges to enter the weld puddle.

The Hot Wire Quill Assembly replaces the standard Wire Feed Quill Assembly on the DualARC weld head and the Wire Straightener Kit mounts onto the wire feeder without modification of existing brackets.

A dedicated Hot Wire program interface within the control console and remote weld program editor allow programmatic control of the energizing and de-energizing of the Hot Wire Weld Power Supply. Current override/trim functions are available for use using the standard remote pendant.



The Hot Wire system maintains true RMS closed-loop AC current control throughout the weld process, delivering consistent and reliable heating of the wire.

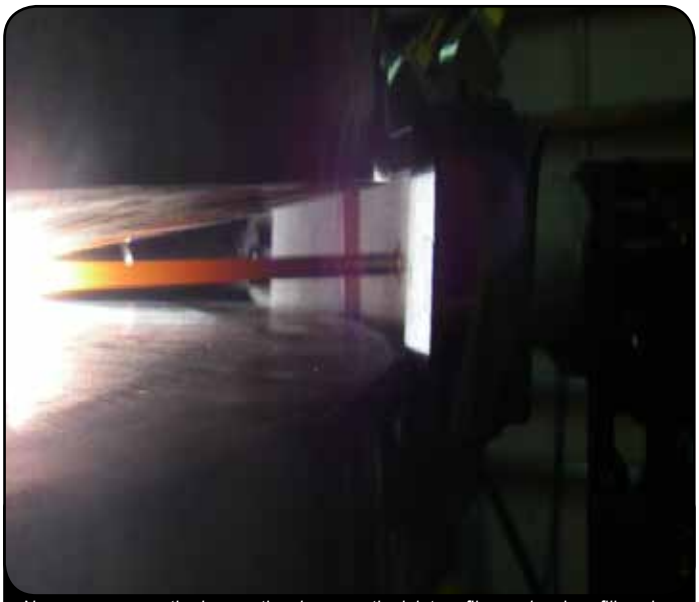
The power supply and drive unit provide up to 1400 W power with 0-14 VAC control, 100 Amps output, and a 250-400 Hz frequency range.

NOTE: The Hot Wire system utilizes .035" (.9mm) welding wire. Consult factory for other sizes.

Narrow Groove Functionality

The AdaptArc system was designed to provide Narrow Groove Welding right out of the box. The flexible system parameters can be programmed to weld narrow groove joints on pipes with up to 1.25" wall thickness. Narrow groove joint profiles result in faster weld times due to less filler wire being required.

Should you need to weld on narrow groove joint profiles greater than 1.25" deep, contact Tri Tool for application assistance. Our technical welding support can help you with mechanical and programming assistance for your special requirements.



Narrow groove methods save time because the joint profile requires less filler wire.

Weld Program Editor

Ease of programming has always been a hallmark of the AdaptARC orbital welding system. The screen interface of the ORBITMASTER Control Console has proven to be a user friendly and compact interface to create, monitor and adapt weld programs.

Our Weld Program Editor (WPE) software is a remote programming application for creating, modifying, and printing weld programs on any compatible PC computer. The WPE graphical interface is user-friendly and provides the same detail and flexibility as the AdaptARC console with the added convenience of working offline from the equipment. Weld programs can be transferred between the AdaptARC console and the WPE software with a USB thumb drive for distribution of programs.

Being able to develop weld programs on a conventional PC, away from the welding workspace, facilitates weld program development and allows you to do weld programming with the AdaptARC system shut off.

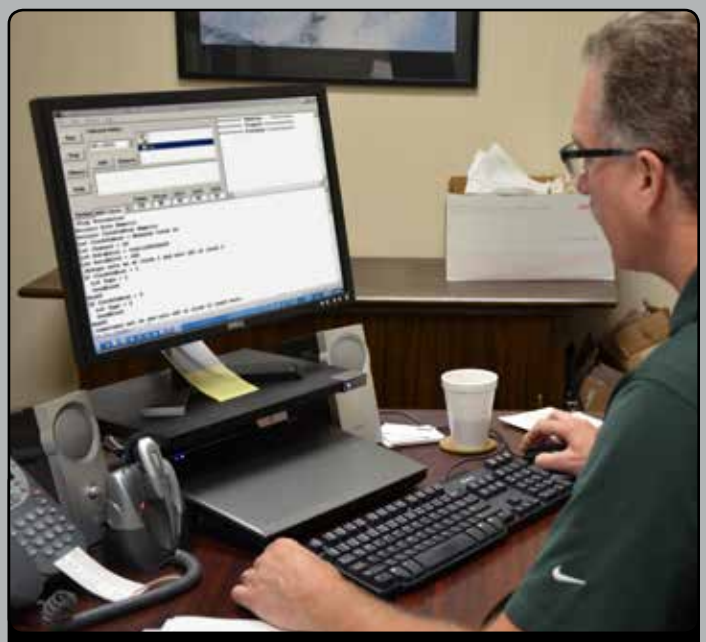
Call for more info on this software that makes user-friendly AdaptARC programming even easier!

Weld Program Development

Tri Tool's comprehensive service and support goes beyond quality equipment design and manufacturing. Welding technology support in the form of specialized program development for your demanding applications, difficult to perform welding processes, or situations involving hard to weld or exotic materials, is only a phone call away.

Support services are available for all your PQR and WPS development.

Programs can be easily sent back and forth via email attachment and then be stored on your system using the convenient and reliable USB interface.



Tri Tool can assist you with custom weld programs for difficult materials or operations.

SUPERIOR MOUNTING

Modular guide tracks for accurate, solid positioning

Maximum grip roller and track for secure straight or curved track operation.

With AdaptARC cost-effective mounting system you can mount up to three different pipe sizes with just one track. Lightweight, durable tracks are available for any pipe size down to 2".

Custom designed, non-metallic, polymer coated drive wheels combined with specially designed knurling provide tremendous grip, overcoming oil or other obstructions that may be on the track.

- **Each track fits on 3 pipe sizes**
- **Get secure mounting on pre-heated pipe with optional spring-loaded mounting pads**
- **Use either curved or flat track with the DualARC weld head**

DualARC weld head mounted on flat track for weld program development tests.

TOTAL VERSATILITY

A unique system designed to deliver a limitless range of welding solutions

- **Program development & validation for a variety of weld procedures**
- **Welder training & certification**
- **Specialty weld applications**

The DualARC weld head can be custom configured for special operations, such as ID cladding.

In the photo at the right, a custom welding fixture was developed for a special cladding application that also required video cameras for remote monitoring of the weld process.

Welding students practicing with the AdaptArc system for a future of superior welds.

AdaptARC equipment with a custom fixture being used for a cladding operation.

The programmable weld controller's unique capability to reverse travel direction produces rapid, repeatable accuracy with projects involving interrupted openings.

When used in this cladding role the ORBITMASTER's high performance Pulse Spray transfer delivered exceptional quality and uniformity, while providing extremely high deposition rates.

The AdaptARC system is the perfect answer to providing a technologically advanced welding system, in a user friendly envelope. This formula permits welders with less training and on-the-job experience to perform repeatable high quality welds. The ideal solution to enterprise staffing levels where experienced welders have been in short supply.

The welder of today has the advantage of being trained on sophisticated machinery that can load predetermined programs, monitor and edit those programs, store the information locally on the weld console, and then distribute the modified program file.

Special Engineering Support

Tri Tool's experienced Special Engineering support can provide you with comprehensive design and manufacturing for any custom AdaptARC fixtures, accessories and mounting systems you need for your specific welding projects.

AdaptARC customers can be confident that, unlike welding systems ordered from a catalog or online, you are supported by a leading equipment manufacturer that utilizes state of the art engineering and has decades of experience providing custom welding systems.

No matter what your work throws at you in terms of welding challenges, Tri Tool can provide the answers.

Our excellent manufacturing support produced this custom built 24' mounting track, used to construct an orbitally welded acid tank for a world class chemical producer.

A world-class welding system solving problems around the globe

Since it's introduction, the advantages of the AdaptARC multi-process welding system have become clear.

Every piece of welding equipment has a unique set of qualifications and features that satisfy the needs of one type of welding. The unwavering role of production welders call for a specific mode of operation, a dedicated mounting system and the ability to produce the same weld countless times.

The AdaptARC system with it's programming flexibility, wide range of operating modes, variety of mounting options and infinite configurability through custom modification, has proven to be the optimal package for numerous fabrication roles where the operator needs the freedom to choose the process and digital control to produce the best welding results possible.

The system has proven to be ideal when working with difficult-to-weld materials such as Super-Duplex, a tough alloy that delivers excellent corrosion resistance for applications like Geothermal piping systems.

AdaptARC equipment with a custom fixture being used for a cladding operation.

Turbine shaft cutout, AdaptARC reweld, and re-machine repair for a power plant.

The AdaptARC, when combined with the extremely precision split frame lathe platform, is capable of following behind precision machining operations with accurate rewelding operations. This combination offers advantages for projects such as the maintenance of damaged turbine shafts in power plants.

The durability of the DualARC mounting tracks permit more than one orbital weld head to be mounted. This means that you can conduct multiple simultaneous welding operations to produce unprecedented levels of weld deposition, reducing the required project time and labor costs significantly.

Fabrication yards that work with pipeline sections, or that fabricate offshore structures need to have a system that can deliver rapid, high-performance welds, in whichever whatever mode is called for in a given situation. Exactly what the AdaptARC was designed for.

AdaptARC is proving that a multi-process machine with unique programming abilities is the perfect solution for many welders

When you ask, "what is the AdaptARC best suited for?" that question may never be answered, as the system has proven to have the versatility to dependably produce quality welding results for every application it has been configured for. If you have the need for an orbital welder, take advantage of AdaptARC's multiple personalities!

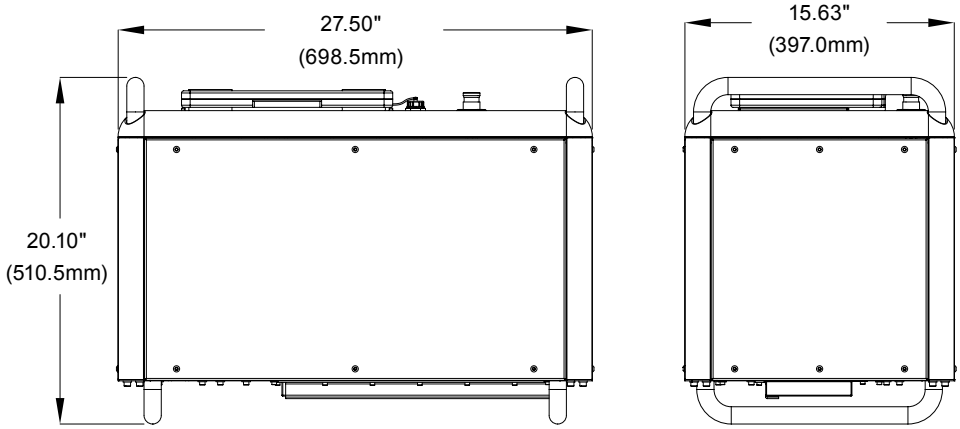
Call today for fast, friendly technical assistance with your orbital welding requirements.

High-performance AdaptARC system performing offshore platform fabrication in New Zealand.

SPECIFICATIONS

ORBITMASTER®

Weight:	95 lbs (43.1 kg) (Appx.)
Clearance and Dimensions	
Height:	20.10” (510.5mm)
Width:	15.63” (397.0mm)
Length:	27.50” (698.5mm)
Power Requirements	
Input Power:	110V Nominal 50/60 Hz - 10A 230 V Nominal 50/60 Hz - 5A
Operating Environment	
Ambient Air Temperature:	0° F (-17.8° C) to +140° F (+60° C)
Relative Humidity:	10% to 90%
Ingress Protection Rating:	IP 23 Protected against solid objects up to .472” (12mm) and direct spray of water up to 60° from vertical.
Altitudes:	0 to 10,000 feet (0 to 3048 m) above mean sea level
Fluid Cooler:	Refer to the manufacturer’s Owner’s Manual for all information pertaining to the fluid cooler
Certification:	A CE certified version of the ORBITMASTER is available.



RELIABLE SUPPORT

A vast inventory of AdaptARC support parts keeps you up and running!

- Designed with “off-the-shelf” parts so you can find replacements faster in your local area. Modular motor and cable assemblies can be changed in-place with common tools.
- A fully digital control system eliminates frequent calibration and reduces costs for E-Tech support, as is required with other systems.


The unique modular approach to the ORBITMASTER console means that with the removal of 8 screws, a control board can be removed for repair or replacement.

DualARC®

Travel

Maximum Speed:	100 in/min (2.54 m/min)
Oscillation/Steering Range:	2.00” (50.8mm)
Maximum Speed:	180 in/min

AVC

Range	2.00” (50.8mm)
Maximum Speed	50 in/min (1.27 m/min)

Wire Feed

Maximum Speed:	700 in/min (17.78 m/min)

Umbilical Length:	32’ (9.75 m) (100’ Optional)
Wire Sizes:	.023, .030, .035, .045

Torch

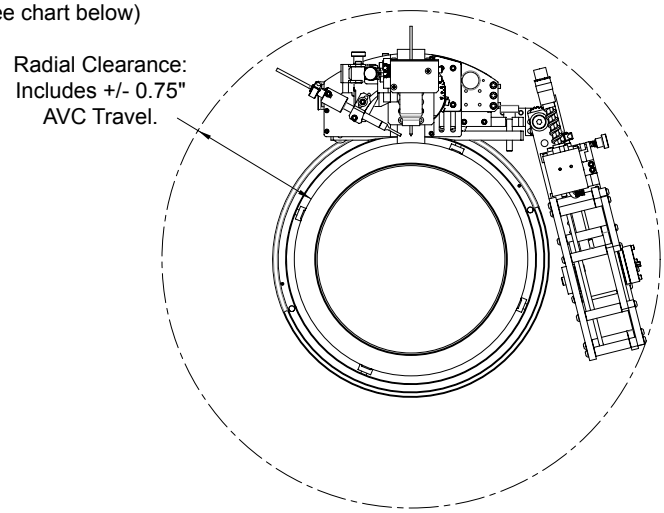
Lead:	15 deg
Lag:	15 deg
Tilt:	+/-15 deg
Course Radial Position:	5.875 in (149.22mm)

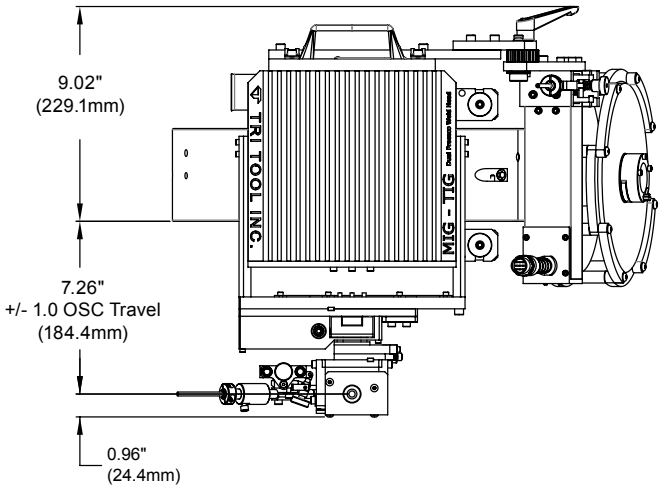
Power:	350A @ 100% duty cycle
Weld Processes:	GMAW, GMAW-P, GTAW, FCAW
Environmental:	Designed to IP23

Operating Environments

Ambient Air Temperature:	0° F (-17.8° C) to +140° F (+60° C)
Relative Humidity:	10% to 90%
Altitudes:	0 to 10,000 feet (0 to 3048 m) above mean sea level

(See chart below)





Radial Clearance - Standard Configuration* ***Without Spool (for Remote Wire Feeder**)***

Track Size		GTAW		GMAW		Track Size		GTAW		GMAW	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
6	152.4	7.9	200.7	7.9	200.7	6	152.4	5.7	144.8	7.1	180.3
12	304.8	7.3	185.4	7.3	185.4	12	304.8	5.7	144.8	7.3	185.4
16	406.4	7.1	180.3	7.3	185.4	16	406.4	7.1	180.3	7.3	185.4
24	609.6	6.9	175.3	7.4	188.0	24	609.6	6.9	175.3	7.4	188.0
30	762.0	6.9	175.3	7.4	188.0	30	762.0	6.9	175.3	7.4	188.0

* Contact Tri Tool’s AdaptARC Staff if you require more restrictive clearances for your applications.

** Tri Tool Inc can custom configure a Remote Wire Feeder for your specific requirements, call for more information.

This information is provided as a guideline only to assist with the selection of equipment and accessories. This information is subject to change without notice. Contact your sales representative for specific details, technical specifications or equipment application assistance.

SPECIALIZED SERVICES

Versatility and Reliability for a wide range of welding applications

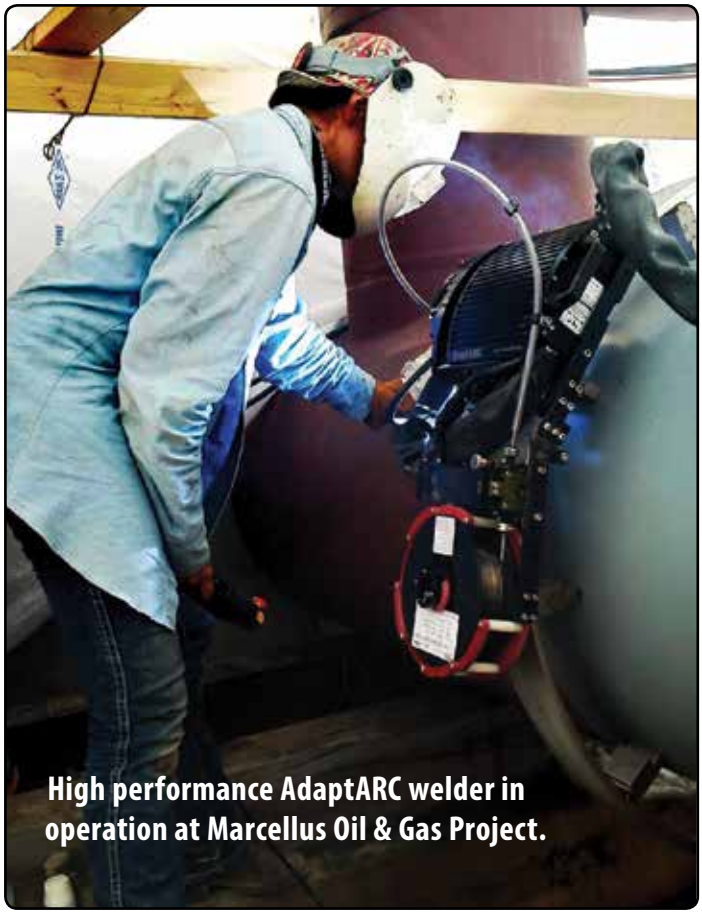
We provide special engineering and custom equipment design and manufacturing. Tri Tool is uniquely qualified to configure the perfect welding systems that is perfectly matched to your specific welding situations.

The reliable DualARC orbital weld head being used for advanced welder training.

AdaptARC's technological advantage is being clearly proven in terms of project productivity and quality, repeatable, certified welds, each and every day.

Tri Tool Services provides a nationwide network of dependable and qualified welding personnel, equipped with reliable and high performance AdaptARC welding equipment ready to perform precision on-site code welding whenever and wherever you require.

With many decades field-proven experience and practical knowledge of welding for construction and maintenance, Tri Tool Services is your best choice to stay on-schedule and on-budget when you require reliable contract code welding services.


High performance AdaptARC welder in operation at Marcellus Oil & Gas Project.


AdaptARC equipment doing WPS development in a Geothermal plant.

Dependable On-Site Welding Services for:

- **Staffing Augmentation**
- **Plant maintenance and construction**
- **Custom welding equipment operation**
- **Welder training & certification**
- **Weld Program Development**
- **Assistance with site safety procedures**

TRI TOOL
BUILDING PERFORMANCE

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