Your Guide to Getting New TIG Welding Business

- Get new business through products designed for specific industries
- Create new sales by upgrading current torch
- Create new business through production TIG application products
- Generate new sales by focusing on accessories for current torches

Use this guide by referencing a specific industry and selecting the product for that industry or by referencing a torch model and selecting an upgrade torch.

Selling standard TIG products has become very price competitive and does not offer any real solutions to the end user. With this booklet you will have the ability to provide TIG welding solutions based on actual applications. Learn what to look for on the job site to upgrade your end users to TIG torches and accessories that are made specifically for the job and are unique products in the market-place. This will focus your sales efforts away from price competitive products to limited distribution premium products that increase your gross profit margin. These items are not available through all welding distributors or through wholesalers. This aids in establishing repeat high profit margin business and getting real solutions to your end users.

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FLEXIBLE PURGE CHAMBER

**BENEFITS**
- Less argon required
- Collapsible, easily stored
- Multiple accessory & glove ports
- Less expensive
- Less time to fill
- Vacuum drawn
- Facilitates welding grade atmosphere
- 30 inch (76.8 cm) diameter

The patented CK Flexible Purge Chamber is used in the Tungsten Inert Gas (TIG) process to provide a completely inert atmosphere for the welding of reactive metals such as titanium, molybdenum, nickel-based and aluminum-based alloys, as well as non-reactive metals like stainless steel. Unique to this design is the ability to draw a vacuum around the product to be welded by collapsing the chamber. The chamber is then filled through a perforated hose that encircles the bottom of the chamber allowing the argon gas to expel all atmospheric gases more effectively through the top valve port. This significantly reduces the time required to reach an inert atmosphere suitable for welding, while using considerably less gas than traditional rigid purge chambers.

**SPECIFICATIONS**
- Height: 20" (51.2cm)
- Width: 30" (76.8cm)
- Shipping weight: 47 lbs. (21.3kg)
- Zipper length: 60" (153.6cm)
- Standard size: 30" (76.8cm) diameter
- 24" (61.4cm) base

ORDER # PC2000-24

LARGE DIAMETER GAS SAVER™

- Largest diffusion screen available on the market
- 1-1/8 inch I.D. (28.6mm) clear high temperature Pyrex nozzle
- Improves visibility versus standard nozzles
- Weld titanium at low amps without a trailing shield
- Great for tack welding and small crack repair outside of chamber

**INCLUDED PARTS:**
- 115V Vacuum pump
- Dual flowmeter/regulator
- 2 Work stations
- 2 Sets of gloves
- 4 Accessory ports
- Heat blanket
- 10’ (3m) Argon hose
- 10’ (3m) Vacuum hose
- Repair kit
- Storage container

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>2 SERIES LARGE DIAMETER KITS:</th>
<th>TUNGSTEN SIZE</th>
<th>ORDER NUMBER</th>
</tr>
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<tbody>
<tr>
<td>USE ON TORCHES</td>
<td>CK9, CK20</td>
<td>D2GS116LD</td>
</tr>
<tr>
<td></td>
<td>1/16” (1.6mm)</td>
<td>D2GS332LD</td>
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<tr>
<td></td>
<td>3/32” (2.4mm)</td>
<td>D2GS418LD</td>
</tr>
<tr>
<td></td>
<td>1/8” (3.2mm)</td>
<td>D2GS550LD</td>
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<td></td>
<td>1/16” (1.6mm)</td>
<td>D4GS332LD</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>1/8” (3.2mm)</td>
<td>D4GS550LD</td>
</tr>
</tbody>
</table>

TRAILING CUPS / PURGE CUPS

When welding with metals such as Titanium, a secondary inert shielding gas application is necessary to protect the cooling weld bead and heat-affected zone. Trailing cups prevent oxidation by shielding the weld from the atmosphere until it has cooled to a safe temperature.

- Purge Cup, 4" (10.2 cm)
- Trailing Cup, 3–5" (7.6 – 12.7 cm) Diameter Pipe

*Contact CK Worldwide for price and availability on other sizes.*
SAFE-LOC™—CABLE EXTENDERS

- Allows quick and easy cable extension "whips" to be made
- All electrical connections are insulated with rugged poly-resin clamshell
- Tweco, Dinse or Camlock style twist fittings available
- Water-cooled or gas-cooled torches are safely and efficiently extended up to 100 feet
- Great for extending “Stinger” electrode holders

STEADY-GRIP™ AMPERAGE CONTROL CK EXCLUSIVE

- Replace foot pedal amperage controls with fingertip operated amperage controls
- Velcro strap allows amperage control to quickly mount on any TIG torch or Stick electrode holder
- Amperage controls available as a complete handle assembly
- Rotary or linear potentiometer style also available
- Fits most popular TIG machines
- Custom lengths available up to 200 feet

STAINLESS STEEL HEAD CK EXCLUSIVE

- 150 amp, 100% duty cycle 17 Series torch designed for harsh welding environments
- Heavy duty stainless steel head eliminates stripping or galling of threads
- Thick walled tube in neck resists breaking or bending
- All o-ring constructed valve eliminates worn out or broken ball valves

FLEX-LOC™ TORCHES—VARIABLE ANGLE TORCH

- 360 degree variable angle torch head
- Locks in any position
- Interchangeable head allows different configurations and head sizes
- Great for “walking the cup” on open root welds for pipe welding
- Access hard to reach welds ergonomically
- Helps prevent carpal tunnel syndrome
- Water or gas cooled

Refer to Accessories page 16 for more details.

Refer to Accessories page 16 for more details. (Flex-Loc™ torch not included.)

Refer to page 9 for more details.

Refer to CK9, CK17, CK20, or CK26 page 8, 9, 10 or 12 for more details.
MT200-AC/DC TIG WELDING SYSTEM

The MT200-AC/DC is the answer to both creativity and production driven TIG welding. This innovative TIG welding machine provides the ability to quickly and efficiently adapt to dynamic welding situations, while maintaining the same quality of experience you have come to expect from CK Worldwide.

Its compact portable design allows you to easily tackle any project from fabrication and education to aerospace and nuclear applications. Whether you TIG weld for enjoyment or as a career you will find that the MT200 can help you accomplish your toughest welding challenges.

With background testing performed by production welders and the best TIG welding professionals in the industry the MT200 delivers precision welding in a conveniently packaged system.

- High-performance dual voltage inverter for 115V and 220V
- Two dynamic welding modes: GTAW (TIG) and SMAW (Stick)
- Easy-to-use interface allows for quick setting adjustments
- Compact, portable design for use in multiple applications

COMPLETE KIT INCLUDES:
- MT200-AC/DC
- CK17 Flex-Head Torch with 12.5’ (3.8m) Super-Flex™ Cables
- Dinse Connector
- AK-3 Accessories/Consumables Kit
- Foot Pedal Amperage Control
- Ground Clamp with 12.5’ (3.8m) Cable
- Single Flow Regulator
- 6’ (1.8m) Argon Hose
- 220V to 115V Power Adapter

"As a welder of critical aircraft hardware, this machine is extremely easy to use and runs as smooth as our more expensive machines at work.”
– R. Harper, AIRCRAFT WELDER, 38 YEARS EXPERIENCE

LARGE DIAMETER GAS SAVER™ CK EXCLUSIVE

Alloys such as Titanium that require extra shield gas coverage are now being used for aerospace and motorsport components. Standard and large diameter gas lenses are not adequate enough to insure a larger surface area of shield gas coverage. CK Worldwide’s Large Diameter Gas Saver is ideal for titanium tubing. High temperature Pyrex glass gas cups insure full visibility of the weld puddle and directs a uniform gas flow pattern over a very large surface area.

Aerospace and motorsport components commonly present odd angles that need to be welded. Standard tungsten stick-out beyond the gas cup does not allow the torch to be put in the proper position to weld those angles. The Large Diameter Gas Saver allows the tungsten to extend up to 1-1/2 inch (38.1mm) beyond the edge of the gas cup giving the welder the ability to access the weld without getting the torch into the angle.

- Largest diffusion screen available on the market
- 1-1/8 inch I.D. (28.6mm) clear high temperature Pyrex nozzle
- Improves visibility versus standard nozzles
- Weld titanium at low amps without a trailing shield
- Great for tack welding and small crack repair outside of chamber

<table>
<thead>
<tr>
<th>2 SERIES LARGE DIAMETER KITS</th>
<th>CK EXCLUSIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>USE ON TORCHES</td>
<td>TUNGSTEN SIZE</td>
</tr>
<tr>
<td>CK9, CK20</td>
<td>1/16” (1.6mm)</td>
</tr>
<tr>
<td></td>
<td>3/32” (2.4mm)</td>
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<td></td>
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<tr>
<th>4 SERIES LARGE DIAMETER KITS</th>
<th>CK EXCLUSIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>USE ON TORCHES</td>
<td>TUNGSTEN SIZE</td>
</tr>
<tr>
<td>CK17, CK18, CK26</td>
<td>1/16” (1.6mm)</td>
</tr>
<tr>
<td></td>
<td>3/32” (2.4mm)</td>
</tr>
<tr>
<td></td>
<td>1/8” (3.2mm)</td>
</tr>
</tbody>
</table>
Largest Line of Machine Torches

- All torches are back-loaded, no need to remove cup to make adjustments
- Adjust tungsten up to 1/4 inch (6.4mm) without removing tungsten from torch
- Adjustable backcap allows AVC adjustment while welding
- Uses standard 10N Series cup and collet body, 10N “stubby” collet
- High temperature phenolic resin insulation

**GAS-COOLED MACHINE TORCHES**

**MT100**
- Gas-cooled
- 100 amp ACHF or DCSP @ 100%
- 4-1/16 inch (10.3cm) 5-3/4 oz. (163gm)
- MT Series Head Accessories (4 Series Collet)
- 21HPCA (2310-1879) Power Cable Adapter

**MT400**
- Water-cooled
- 400 amp ACHF or DCSP @ 100%
- 4-1/16 inch (10.3cm) 6-1/4 oz. (177gm)
- MT Series Head Accessories (4 Series Collet)
- 2PCA Power Cable Adapter

**MT500-7**
- Water-cooled
- 500 amp ACHF or DCSP @ 100%
- 7 inch (17.8cm) 12 oz. (340gm)
- MT Series Head Accessories (4 Series Collet)
- 2PCA Power Cable Adapter

**MT500-18**
- Water-cooled
- 500 amp ACHF or DCSP @ 100%
- 18 inch (45.7cm) 16 oz. (454gm)
- MT Series Head Accessories (4 Series Collet)
- 2PCA Power Cable Adapter

**WATER-COOLED MACHINE TORCHES**

**MT500 -18 MACHINE TORCH CK EXCLUSIVE**
- Water-cooled
- 500 amp ACHF or DCSP @ 100%
- 18 inch (45.7cm) 16 oz. (454gm)
- MT Series Head Accessories (4 Series Collet)
- 2PCA Power Cable Adapter

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- Gas-cooled
- 100 amp ACHF or DCSP @ 100%
- 4-1/16 inch (10.3cm) 5-3/4 oz. (163gm)
- MT Series Head Accessories (4 Series Collet)
- 21HPCA (2310-1879) Power Cable Adapter

**MT400 MACHINE TORCH CK EXCLUSIVE**
- Water-cooled
- 400 amp ACHF or DCSP @ 100%
- 4-1/16 inch (10.3cm) 6-1/4 oz. (177gm)
- MT Series Head Accessories (4 Series Collet)
- 2PCA Power Cable Adapter

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Cold Wire TIG Feeders Maximize Production

- Increase productivity by up to 30%
- Automates adding of filler metal in TIG welding
- All weld parameters can be duplicated
- Dual Groove Drive Roll system accepts multiple wire sizes
- Uses standard wire spool sizes
- Eliminates TIG rod stub loss
- Cabinet keeps filler wire clean
- Makes fully automatic machine TIG welding possible
- Results in consistent high quality welds

**FOR SALE**

**WF-5** COLD WIRE TIG FEEDER CK EXCLUSIVE

*For complete installation of a Cold Wire TIG System, you need both the Cold Wire Feeder and a TIG torch (hand held or machine mounted) with cold wire TIG capabilities. The Cold Wire TIG System works independent of a standard TIG power supply using normal TIG welding parameters.*

### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Voltage</th>
<th>115V AC (220V AC 50 Hz.—Special Order)</th>
</tr>
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<tbody>
<tr>
<td>Phase</td>
<td>Single Phase</td>
</tr>
<tr>
<td>Frequency</td>
<td>50/60 Hz.</td>
</tr>
<tr>
<td>Height</td>
<td>15 in. (38.1cm)</td>
</tr>
<tr>
<td>Width</td>
<td>10 in. (25.4cm)</td>
</tr>
<tr>
<td>Length</td>
<td>21 in. (53.3cm)</td>
</tr>
<tr>
<td>Weight</td>
<td>39 lbs. (17.7kg)</td>
</tr>
<tr>
<td>Fill Spool Size</td>
<td>12 in. (30.5cm)</td>
</tr>
<tr>
<td>Fill Sizes</td>
<td>.023 in. (.5mm), .030 in. (.8mm), .035 in. (.9mm), .045 in. (1.1mm), 1/16 in. (1.6mm)</td>
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<tr>
<td>Wire Feed Speed Range</td>
<td>0–700 in/min (0–1,775 cm/min)</td>
</tr>
<tr>
<td>Feed Time (pulsed mode)</td>
<td>continuously variable</td>
</tr>
<tr>
<td>Dwell Time (pulsed mode)</td>
<td>continuously variable</td>
</tr>
<tr>
<td>Delay Start Time</td>
<td>continuously variable</td>
</tr>
<tr>
<td>Wire Retract Time</td>
<td>continuously variable</td>
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**APPLICATION DRIVE ROLL| WIRE SIZE | ORDER #**

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<thead>
<tr>
<th>APPLICATION</th>
<th>DRIVE ROLL</th>
<th>WIRE SIZE</th>
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<tbody>
<tr>
<td>Hand Held/ Machine Mounted</td>
<td>20–35DR</td>
<td>.023 in. – .035 in. (.5mm–.9mm)</td>
<td>WF5-030</td>
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<tr>
<td>Hand Held/ Machine Mounted</td>
<td>30–45DR</td>
<td>.030 in. – .045 in. (.8mm–1.1mm)</td>
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<tr>
<td>Hand Held/ Machine Mounted</td>
<td>45–564DR</td>
<td>.045 in. – 1/16 in. (1.1mm–1.6mm)</td>
<td>WF5-116</td>
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</tbody>
</table>

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**CK9**

- Light weight, light duty torch
- Constructed with a hardened brass alloy head to reduce thread damage
- Silicon rubber insulation provides best protection against high frequency leakage

**TORCH UPGRADES**

**FLEX-LOC™**

- 360 degree variable angle torch head
- Locks in any position
- Interchangeable head allows different configurations and head sizes
- Great for “walking the cup” on open root welds for pipe welding
- Access hard to reach welds ergonomically

**APPLICATIONS:**
Cup walking on pipe root welds, welds that require a mirror to access weldment.

**STUBBY CONSUMABLES**

- Shortens front end of torch to access hard to reach weld joints
- Uses 24 Series nozzles
- Reduces overall length by 1/2 inch (12.8mm)
- Use with short back cap for smallest configuration

**SUPER-FLEX™ CABLES**

- Lightest most flexible cable assemblies available
- Fits standard gas-cooled or water-cooled torch packages
- Stays flexible even in the coldest environments
- Silicon rubber hose construction with a nylon over-braid to resist abrasion
- Great for intricate, precise welding applications
CK17

- Most popular torch in the world
- More mass in the head of the torch equals more efficient heat dissipation
- Constructed with a hardened brass alloy head to reduce thread damage
- Brass head resists galling and seizing of collet body versus copper head
- Largest metal head insert insures maximum cooling, longer life
- Heavy duty construction allows longer welding time at 150 amps

TORCH UPGRADES

FLEX-LOC™

- 360 degree variable angle torch head
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- Great for “walking the cup” on open root welds for pipe welding
- Access hard to reach welds ergonomically
- Helps prevent carpal tunnel syndrome

APPLICATIONS:
Cup walking on pipe root welds, welds that require a mirror to access weldment.

STAINLESS STEEL HEAD

- 150 amp, 100% duty cycle 17 Series torch designed for harsh welding environments
- Heavy duty stainless steel head eliminates stripping or galling of threads
- Thick walled tube in neck resists breaking or bending
- All o-ring constructed valve eliminates worn-out or broken ball valves

APPLICATIONS:
Construction companies, shipyards, vocational schools and any large company that encounters abusive usage of the equipment.

TRIM-LINE™

- Smallest 200 amp torch available in the market
- High amperage torch with physical size of 17 Series
- Larger hardened brass head insert allows 200 amp capacity

APPLICATIONS:
Construction companies, shipyards, job shops, field installers, and any application requiring a high amperage torch when a water cooler is not practical.

GAS-COOLED FLEX-LOC TORCH CK EXCLUSIVE

<table>
<thead>
<tr>
<th>HEAD STYLE</th>
<th>CABLE</th>
<th>LENGTH</th>
<th>STANDARD</th>
<th>SUPER-FLEX</th>
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<tbody>
<tr>
<td>FL3L w/o Valve</td>
<td>1 Piece</td>
<td>12-1/2 ft.</td>
<td>FL1512</td>
<td>FL1512SF</td>
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<td>25 ft.</td>
<td>FL1525</td>
<td>FL1525SF</td>
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<tr>
<td>FL3L w/ Valve</td>
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<td>12-1/2 ft.</td>
<td>FL1512V</td>
<td>FL1512VSF</td>
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<td></td>
<td>25 ft.</td>
<td>FL1525V</td>
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CKC150 & CKC150V RIGID CK EXCLUSIVE

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<td>CKC1512H</td>
<td>CKC1512HSF</td>
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<td>25 ft.</td>
<td>CKC1525H</td>
<td>CKC1525HSF</td>
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<tr>
<td></td>
<td></td>
<td>12-1/2 ft.</td>
<td>CKC1512N</td>
<td>CKC1512NSF</td>
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<td>CKC1525N</td>
<td>CKC1525NSF</td>
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<td>25 ft.</td>
<td>CKC1525VH</td>
<td>CKC1525VHSF</td>
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<tr>
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<td></td>
<td>12-1/2 ft.</td>
<td>CKC1512VN</td>
<td>CKC1512VNSF</td>
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<tr>
<td></td>
<td></td>
<td>25 ft.</td>
<td>CKC1525VN</td>
<td>CKC1525VNSF</td>
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TL26 & TL26V RIGID CK EXCLUSIVE

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<th>CABLE</th>
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<th>SUPER-FLEX</th>
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<tbody>
<tr>
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<td>12-1/2 ft.</td>
<td>TL26-12-R</td>
<td>TL26-12-RSF</td>
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<tr>
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<td>TL26-25-R</td>
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<td>TL26-12-2</td>
<td>TL26-12-2SF</td>
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<td>TL26-25-2</td>
<td>TL26-25-2SF</td>
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<tr>
<td>Rigid Head w/ Valve</td>
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<td>TL26V-12-R</td>
<td>TL26V-12-RSF</td>
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<tr>
<td></td>
<td></td>
<td>25 ft.</td>
<td>TL26V-25-R</td>
<td>TL26V-25-RSF</td>
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<tr>
<td></td>
<td></td>
<td>12-1/2 ft.</td>
<td>TL26V-12-2</td>
<td>TL26V-12-2SF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25 ft.</td>
<td>TL26V-25-2</td>
<td>TL26V-25-2SF</td>
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P: (253) 854.5820  F: (253) 939.1746  TOLL FREE: (800) 426.0877  www.CKWORLDWIDE.com
TORCH UPGRADES

TRIM-LINE™
- Smallest 200 amp torch available in the market
- High amperage torch with physical size of 17 Series
- Larger hardened brass head insert allows 200 amp capacity

APPLICATIONS:
Construction companies, shipyards, job shops, field installers, and any application requiring a high amperage torch when a water cooler is not practical.

FLEX-LOC™
- 360 degree variable angle torch head
- Locks in any position
- Interchangeable head allows different configurations and head sizes
- Great for “walking the cup” on open root welds for pipe welding
- Access hard to reach welds ergonomically
- Helps prevent carpal tunnel syndrome

APPLICATIONS:
Cup walking on pipe root welds, welds that require a mirror to access weldment.

STUBBY SERIES CONSUMABLES
- Shortens front end of torch to access hard to reach weld joints
- Uses 13N Series nozzles
- Reduces overall length by 3/4 inch (19.2mm)
- Use with short back cap for smallest configuration

<table>
<thead>
<tr>
<th>HEAD STYLE</th>
<th>CABLE</th>
<th>LENGTH</th>
<th>STANDARD</th>
<th>SUPER-FLEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rigid Head w/o Valve</td>
<td>1 Piece</td>
<td>12-1/2 ft. (3.8m)</td>
<td>TL26-12-R</td>
<td>TL26-12-RSF</td>
</tr>
<tr>
<td></td>
<td>1 Piece</td>
<td>25 ft. (7.6m)</td>
<td>TL26-25-R</td>
<td>TL26-25-RSF</td>
</tr>
<tr>
<td>Rigid Head w/ Valve</td>
<td>2 Piece</td>
<td>12-1/2 ft. (3.8m)</td>
<td>TL26-12-2</td>
<td>TL26-12-2SF</td>
</tr>
<tr>
<td></td>
<td>2 Piece</td>
<td>25 ft. (7.6m)</td>
<td>TL26-25-2</td>
<td>TL26-25-2SF</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HEAD STYLE</th>
<th>CABLE</th>
<th>LENGTH</th>
<th>STANDARD</th>
<th>SUPER-FLEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>FL3L w/o Valve</td>
<td>1 Piece</td>
<td>12-1/2 ft. (3.8m)</td>
<td>FL1512</td>
<td>FL1512SF</td>
</tr>
<tr>
<td></td>
<td>1 Piece</td>
<td>25 ft. (7.6m)</td>
<td>FL1525</td>
<td>FL1525SF</td>
</tr>
<tr>
<td>FL3L w/ Valve</td>
<td>2 Piece</td>
<td>12-1/2 ft. (3.8m)</td>
<td>FL1512V</td>
<td>FL1512VSF</td>
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<tr>
<td></td>
<td>2 Piece</td>
<td>25 ft. (7.6m)</td>
<td>FL1525V</td>
<td>FL1525VSF</td>
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<th>LENGTH</th>
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<th>SUPER-FLEX</th>
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<tbody>
<tr>
<td>ALUMINA</td>
<td>2A4 (13N08)</td>
<td>4CB20</td>
<td>300HS</td>
<td>300S (57Y04)</td>
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<tr>
<td></td>
<td>2A5 (13N09)</td>
<td>4CB40</td>
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<td>2A6 (13N10)</td>
<td>4CB80</td>
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<td>2A7 (13N11)</td>
<td>4CB116</td>
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<td></td>
<td>2A8 (13N12)</td>
<td>4CB418</td>
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<td></td>
<td>2A10 (13N13)</td>
<td>4CB532</td>
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<tr>
<td>SHORT</td>
<td>1.453&quot;</td>
<td>36.91mm</td>
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<tr>
<td>STANDARD</td>
<td>2.256&quot;</td>
<td>57.30mm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CK18

- Largest water jacket available; 300% more cooling
- Largest metal mass insert
- More mass in the head of the torch equals more efficient heat dissipation
-Constructed with a hardened brass alloy head to reduce thread damage
-Brass head resists galling and seizing of collet body versus copper head
-Fail-Safe hose connections eliminates wire ties for positive seal

TORCH UPGRADES

TRIM-LINE™

- Smallest 350 amp water-cooled torch at 100% duty cycle
- Large water jacket cools torch more efficiently
- Cooler running torch allows longer life of consumables
- Same physical size as 17 Series
- Lighter weight and size equals greater productivity and less operator fatigue

APPLICATIONS:

High production TIG applications, aluminum boat manufacturers, job shops, any welding application where a standard 18 Series torch is too bulky.

CK510

- Smallest 500 amp water-cooled torch at 100% duty cycle
- Most versatile water-cooled torch available
- Uses .020 inch (.5mm) up to 1/4 inch (6.4mm) tungsten electrodes
- Large water jacket cools torch more efficiently
- Cooler running torch allows longer life of consumables

APPLICATIONS:

High amperage welds, heavy aluminum, heavy copper, job shops requiring a versatile torch using .020” (.5mm) to 1/4” (6.4mm) tungsten.

INCREASED COOLING CAPACITY

CK WORLDWIDE

MAX-FLO.

- Up to 4 x the surface area for maximum heat transfer
- Cooler running torch
- Increased amperage capacity
- Longer consumable life
- Less down time
- Will hook up to standard cables and hoses

WELDCRAFT®
CK20

- Most popular water-cooled torch
- Largest water jacket available; 300% more cooling
- Largest metal mass insert
- More mass in the head of the torch equals more efficient heat dissipation
- Constructed with a hardened brass alloy head to reduce thread damage
- Fail-Safe hose connections eliminates wire ties for positive seal

TORCH UPGRADES

FLEX-LOC **CK EXCLUSIVE**

- 360 degree variable angle torch head
- Locks in any position
- Interchangeable head allows different configurations and head sizes
- Great for “walking the cup” on open root welds for pipe welding
- Access hard to reach welds ergonomically
- Helps prevent carpal tunnel syndrome

APPLICATIIONS:
Cup walking on pipe root welds, welds that require a mirror to access weldment, welds requiring different tungsten sizes.

CK230 **CK EXCLUSIVE**

- Heavy duty 300 amp 100% duty cycle torch
- Uses 20 series consumables
- Larger water jacket design runs cooler giving longer life to consumables
- Fully achieve 1/8 inch tungsten electrode capability on thick aluminum joints

APPLICATIIONS:
Aluminum boat manufacturers, motorcycle manufacturers, bicycle manufacturers, high amperage welding applications with space restrictions.

INCREASED COOLING CAPACITY

**CK WORLDWIDE**

- Up to 4 x the surface area for maximum heat transfer
- Cooler running torch
- Increased amperage capacity
- Longer consumable life
- Less down time
- Will hook up to standard cables and hoses

**MAX-FLO.**

**WELDCRAFT®**
MICRO-TORCH • CK EXCLUSIVE

- 70 or 140 Amps at 100% duty cycle, low profile micro torch
- 45°, 90° and 180° interchangeable heads
- Clear Pyrex nozzle fits on all three heads
- Super-Flex® cable assembly makes it easier to manipulate the torch
- Tungsten gauge and wrench makes installing tungsten easy

KIT INCLUDES:
• 45°, 90° and 180° interchangeable heads
• .040” (1.0mm), 1/16” (1.6mm) and 3/32” (2.4mm) collets
• 3 Clear Pyrex nozzles
• 3 pieces of Tungsten
• Tungsten Stick-Out Gauge and Wrench

SPECIFICATIONS:
Neck Diameter......0.312” (7.92mm)
Neck Length........3.100” (78.74mm)
Cup Diameter.......0.360” (9.14mm)
Cup Length ..........0.600” (15.24mm)

TUNGSTEN SIZES:
- .040” (1.0mm)
- 1/16” (1.6mm)
- 3/32” (2.4mm)

Actual sizes shown

SPECIFICATIONS:
Length..............0.9” (22.86mm)
Grind...............20° Grind
Diameter...........0.40” (1.0mm)
1/16” (1.6mm)
3/32” (2.4mm)
1/4" I.D. (6.4mm) INERT GAS (ARGIN) HOSE  CK EXCLUSIVE

- 1/4" I.D. (6.4mm) clear inert gas hose
- Can be ordered in a 300' (91.4m) bulk reel without fittings
- Hoses include inert gas fittings (5/8-18 RH Male on both ends)

1/4" I.D. (6.4mm) INERT GAS (ARGIN) HOSE  CK EXCLUSIVE

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>ORDER NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot; I.D. (6.4mm) Clear Inert Gas Hose</td>
<td>ARH-BULK</td>
</tr>
<tr>
<td>12-1/2' (3.8m) Clear Inert Gas Hose</td>
<td>ARH-12</td>
</tr>
<tr>
<td>25' (7.6m) Clear Inert Gas Hose</td>
<td>ARH-25</td>
</tr>
<tr>
<td>50' (15.2m) Clear Inert Gas Hose</td>
<td>ARH-50</td>
</tr>
<tr>
<td>75' (22.9m) Clear Inert Gas Hose</td>
<td>ARH-75</td>
</tr>
<tr>
<td>100' (30.5m) Clear Inert Gas Hose</td>
<td>ARH-100</td>
</tr>
</tbody>
</table>

*300' (91.4m) reels only, NO EXCEPTIONS

REINFORCED CLEAR VINYL HOSE

REGULATORS

Our Regulator/Flowmeter combinations are specially designed for TIG welding applications. Unique design and construction features make these units equally suited for applications from the industrial job site to the laboratory.

ORDER # 191AR-60
- Regulator/Flowmeter combination in one compact unit
- Ideal for applications where dependability is needed
- Machined brass body and housing cap
- Cover tube contains overpressure protection

ORDER # 196AR-60
- Monitors two separate gas flow settings at the same time
- Dual flowmeter allows for purging operations
- Regulator is preset at 50PSIG
- Single-stage construction
- Body machined from class “A” brass

GAS FLOW TESTER

USE THE CK-GFT TO QUICKLY AND EASILY CHECK YOUR FLOW RATE AT THE TORCH NOZZLE!

ORDER # CK-GFT

Accessories

CK Solutions
**Super Cups**

The right nozzle for the toughest TIG welding applications

Super Cups withstand high-amperage and high-reflective heat applications while minimizing cracking problems related to thermal shock.

- Lasts longer in high-heat applications than alumina cups.
- Reduce downtime.
- Reduce replacement part costs.
- Reduce thermal conductivity by approximately 40%.

**Super Cups minimize cracking problems related to thermal shock. Save time and money while reducing thermal conductivity by 40%.**

**Available to fit all 2 and 3 series torches.**

### SERIES 2 SUPER CUPS
**TORCH MODELS 9, 20**

<table>
<thead>
<tr>
<th>STANDARD</th>
<th>GAS LENS</th>
<th>LARGE DIAMETER</th>
</tr>
</thead>
<tbody>
<tr>
<td>2S4 (13N08SC)</td>
<td>2SG4 (53N58SC)</td>
<td>3SG6LD (57N75SC)</td>
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<tr>
<td>2S5 (13N09SC)</td>
<td>2SG5 (53N59SC)</td>
<td>3SG8LD (57N74SC)</td>
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<td>2S6 (13N10SC)</td>
<td>2SG6 (53N60SC)</td>
<td>3SG10LD (53N68SC)</td>
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<td>2S7 (13N11SC)</td>
<td>2SG7 (53N61SC)</td>
<td>3SG12LD (53N75SC)</td>
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<td>2S8 (13N12SC)</td>
<td>2SG8 (53N62SC)</td>
<td>3S10 (10N45SC)</td>
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<tr>
<td>2S10 (13N13SC)</td>
<td>2SG10 (53N65SC)</td>
<td>3S12 (10N44SC)</td>
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</table>

### SERIES 3 SUPER CUPS
**TORCH MODELS 17, 18, 26**

<table>
<thead>
<tr>
<th>STANDARD</th>
<th>GAS LENS</th>
<th>LARGE DIAMETER</th>
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</thead>
<tbody>
<tr>
<td>3S4 (10N50SC)</td>
<td>3SG4 (54N16SC)</td>
<td>3SG6LD (57N75SC)</td>
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<tr>
<td>3S5 (10N49SC)</td>
<td>3SG5 (54N17SC)</td>
<td>3SG8LD (57N74SC)</td>
</tr>
<tr>
<td>3S6 (10N48SC)</td>
<td>3SG6 (54N16SC)</td>
<td>3SG10LD (53N68SC)</td>
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<td>3S7 (10N47SC)</td>
<td>3SG7 (54N15SC)</td>
<td>3SG12LD (53N75SC)</td>
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<td>3S8 (10N46SC)</td>
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<td>3S10 (10N45SC)</td>
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<tr>
<td>3S10 (10N45SC)</td>
<td></td>
<td>3S12 (10N44SC)</td>
</tr>
<tr>
<td>3S12 (10N44SC)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### ELECTRONIC WELDING HELMET

- 4 Sensors for out of position welding
- High quality LCD and multilayer optical interference filter provide clear view and permanent UV/IR protection up to DIN 15.
- Power supply by solar cells and Lithium batteries (replaceable).
- Digital low battery warning indicator.
- Mask made of high impact resistant special nylon.
- Ample mask space, especially for ears and neck.
- Adaptor for plastic magnifying lens.
- CE EN 379, ANSI Z87.1, CSA Z94.3
- Standard 4-1/2" x 5-1/4" (11.4cm x 13.3cm) cover lens.

**SPECIFICATIONS**

- Cartridge Size: 4-1/2" x 5-1/4" x 3/8" (114mm x 133mm x 9.5mm)
- Viewing Size: 3.94" x 2.36" (100mm x 60mm)
- Light State Shade: 4
- Dark State Shade: 9 – 13
- Shade Control: Internal and Digital
- Grinding Function: Digital
- Sensitivity Control: Adjustable
- Switching Time: 0.08 milliseconds
- Arc Sensors: 4
- Weight: 1.21 lbs. (550 grams)
- Warranty: 2 years

**ORDER # CK-ADWH**

---

**Follow us:** [YouTube] [Facebook] [Back to Table of Contents] [Online Parts Manual]
**SAFE-LOC CONNECTORS**

- Efficient and safe way to extend power cables
- All electrical connections are insulated with a rugged poly-resin clamshell
- Tweco, Dinse or Cam-Loc twist lock fittings are available
- Available for gas-cooled or water-cooled torches
- Eliminate using a hazardous “stinger” electrode holder to extend cables
- Safely extend cables up to an overall length of 100 feet (30.48m)

---

**LEATHER VELCRO HOSE COVERS** *CK EXCLUSIVE*

- Abrasion resistant
- Heat resistant
- UV resistant
- Oil resistant
- Flame resistant
- Durable leather protective cover
- Easy opening and closing
- Remains flexible in all climates
- Lightweight, supple
- No more damaged zippers or snaps

---

**CONNECTORS FOR WATER-COOLED TORCHES** *CK EXCLUSIVE*

<table>
<thead>
<tr>
<th>USED ON TORCHES</th>
<th>DESCRIPTION</th>
<th>PART NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>CK18, CK20</td>
<td>Tweco for water-cooled cables</td>
<td>SLWHAT-T</td>
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<tr>
<td>CK18, CK20</td>
<td>Dinse 35 for water-cooled cables</td>
<td>SLWHAT-35</td>
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**CONNECTORS FOR GAS-COOLED TORCHES** *CK EXCLUSIVE*

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<thead>
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<th>USED ON TORCHES</th>
<th>DESCRIPTION</th>
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<tbody>
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<td>CK9, CK17</td>
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<td>SL-2</td>
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<tr>
<td>CK9, CK17</td>
<td>Dinse 35 for gas-cooled cables</td>
<td>SL2-35</td>
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<tr>
<td>CK150, TL210</td>
<td>Tweco for gas-cooled cables</td>
<td>SL5-35</td>
</tr>
<tr>
<td>CK26, TL26</td>
<td>Dinse 35 for gas-cooled cables</td>
<td>SL8-35</td>
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**LEATHER HOSE COVERS** *CK EXCLUSIVE*

<table>
<thead>
<tr>
<th>USED ON TORCHES</th>
<th>LENGTH</th>
<th>WIDTH</th>
<th>INSIDE DIAMETER</th>
<th>ORDER NUMBER</th>
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<tbody>
<tr>
<td>CK9, CK20</td>
<td>10 ft. (3.0m)</td>
<td>3-3/4” (94mm)</td>
<td>1” (24.5mm)</td>
<td>212HCLV</td>
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<tr>
<td>CK9, CK20</td>
<td>22 ft. (7.0m)</td>
<td>3-3/4” (94mm)</td>
<td>1” (24.5mm)</td>
<td>225HCLV</td>
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<tr>
<td>CK17, CK18, CK26</td>
<td>10 ft. (3.0m)</td>
<td>4-1/2” (113mm)</td>
<td>1-1/4” (30.6mm)</td>
<td>312HCLV</td>
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<tr>
<td>CK17, CK18, CK26</td>
<td>22 ft. (7.0m)</td>
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<td>1-1/4” (30.6mm)</td>
<td>325HCLV</td>
</tr>
</tbody>
</table>

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**REMOTE AMPERAGE CONTROL** *CK EXCLUSIVE*

- Available in either Steady-Grip®, rotary, linear slide, or spring loaded wheel configurations
- Fits most makes and models of TIG power supplies
- Controls contactor on / off, gas solenoids and full range current output
- Available with a Velcro strap or built into the torch handle
- Contact CK for order numbers

---

**CONNECTORS FOR WATER-COOLED TORCHES**

- Tweco for water-cooled cables
- Dinse 35 for water-cooled cables

**CONNECTORS FOR GAS-COOLED TORCHES**

- Tweco for gas-cooled cables
- Dinse 35 for gas-cooled cables

**LEATHER VELCRO HOSE COVERS**

- Abrasion resistant
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- Lightweight, supple
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- Contact CK for order numbers
**FUSE BLOCK**

- In-line fuse link protects water-cooled torches and cables
- Less down time repairing burnt up power cables
- Save repair costs by replacing a simple fuse link not an expensive power cable

<table>
<thead>
<tr>
<th>FUSE BLOCK FOR WATER-COOLED TORCHES</th>
</tr>
</thead>
<tbody>
<tr>
<td>USED ON TORCHES</td>
</tr>
<tr>
<td>CK20, CK18</td>
</tr>
</tbody>
</table>

**SUPER-FLEX™ CABLES**

- Lightweight silicon rubber with nylon overbraid protection
- Available for all gas-cooled or water-cooled torches
- Replaces heavy, stiff cables increasing range of motion
- Stays flexible in harsh weather conditions

**WEDGE COLLET**  
**CK EXCLUSIVE**

- Lasts 10 times longer than standard split collets
- Improves arc starts and arc stability
- Requires less pressure from the backcap improving thread life on torch head
- Tungsten is in direct contact with collet body creating less resistance heating
- Runs cooler minimizing down time replacing collets
- Eliminates twisting and deformation of collet
- Fits any standard collet body or gas lens

**GAS SAVER™ KITS**  
**CK EXCLUSIVE**

- Saves up to 40% of shield gas consumption
- Provides better gas coverage versus standard collet bodies
- Allows up to 6 times the diameter of electrode stick-out from gas nozzle
- Clear Pyrex or Alumina push on nozzles available
- Improves visibility
- Less expensive replacement parts than standard gas lenses
- Fits most standard silicon rubber insulated torch bodies

---

**TWO SERIES COMPLETE FRONT END KITS:**

<table>
<thead>
<tr>
<th>USE ON TORCHES</th>
<th>TUNGSTEN SIZE</th>
<th>ORDER NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>CK9, CK20</td>
<td>1/16” (1.6mm)</td>
<td>D2GS116</td>
</tr>
<tr>
<td>CK9, CK20</td>
<td>3/32” (2.4mm)</td>
<td>D2GS332</td>
</tr>
<tr>
<td>CK9, CK20</td>
<td>1/8” (3.2mm)</td>
<td>D2GS418</td>
</tr>
</tbody>
</table>

**THREE SERIES COMPLETE FRONT END KITS:**

<table>
<thead>
<tr>
<th>USE ON TORCHES</th>
<th>TUNGSTEN SIZE</th>
<th>ORDER NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>CK17, CK18, CK26</td>
<td>1/16” (1.6mm)</td>
<td>D3GS116-P</td>
</tr>
<tr>
<td>CK17, CK18, CK26</td>
<td>3/32” (2.4mm)</td>
<td>D3GS332-P</td>
</tr>
<tr>
<td>CK17, CK18, CK26</td>
<td>1/8” (3.2mm)</td>
<td>D3GS418-P</td>
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</tbody>
</table>

---
TUNGSTEN ELECTRODES

<table>
<thead>
<tr>
<th>ISO 6848 COLOR CHART</th>
<th>DESCRIPTION</th>
<th>INCHES</th>
<th>MILLIMETERS</th>
<th>PART #</th>
</tr>
</thead>
<tbody>
<tr>
<td>2% Thoriated Red</td>
<td>0.020 x 7&quot;</td>
<td>0.5 x 175</td>
<td>T0207G2</td>
<td></td>
</tr>
<tr>
<td>AWS A5.12 EWTh-2</td>
<td>0.040 x 7&quot;</td>
<td>1.0 x 175</td>
<td>T0407G2</td>
<td></td>
</tr>
<tr>
<td>ISO 6848 WT20</td>
<td>1/16 x 7&quot;</td>
<td>1.6 x 175</td>
<td>T1167G2, T1167G2-3</td>
<td></td>
</tr>
<tr>
<td>1/16 x 7&quot;</td>
<td>3/32 x 7&quot;</td>
<td>2.4 x 175</td>
<td>T3327G2, T3327G2-3</td>
<td></td>
</tr>
<tr>
<td>2% Lanthanated</td>
<td>0.020 x 7&quot;</td>
<td>0.5 x 175</td>
<td>T0207G2</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>0.040 x 7&quot;</td>
<td>1.0 x 175</td>
<td>T0407G2</td>
<td></td>
</tr>
<tr>
<td>AWS A5.12 EWTa-2</td>
<td>1/16 x 7&quot;</td>
<td>1.6 x 175</td>
<td>T1167G2, T1167G2-3</td>
<td></td>
</tr>
<tr>
<td>ISO 6848 WT28</td>
<td>3/32 x 7&quot;</td>
<td>2.4 x 175</td>
<td>T3327G2, T3327G2-3</td>
<td></td>
</tr>
<tr>
<td>1/16 x 7&quot;</td>
<td>5/32 x 7&quot;</td>
<td>4.0 x 175</td>
<td>T5327G2</td>
<td></td>
</tr>
<tr>
<td>.8% Zirconated White</td>
<td>0.020 x 7&quot;</td>
<td>0.5 x 175</td>
<td>T0207G2</td>
<td></td>
</tr>
<tr>
<td>AWS A5.12 EWZr-8</td>
<td>0.040 x 7&quot;</td>
<td>1.0 x 175</td>
<td>T0407G2</td>
<td></td>
</tr>
<tr>
<td>ISO 6848 WZ8</td>
<td>1/16 x 7&quot;</td>
<td>1.6 x 175</td>
<td>T1167G2, T1167G2-3</td>
<td></td>
</tr>
<tr>
<td>1/16 x 7&quot;</td>
<td>3/32 x 7&quot;</td>
<td>2.4 x 175</td>
<td>T3327G2, T3327G2-3</td>
<td></td>
</tr>
<tr>
<td>1/16 x 7&quot;</td>
<td>5/32 x 7&quot;</td>
<td>4.0 x 175</td>
<td>T5327G2</td>
<td></td>
</tr>
<tr>
<td>1.5% Lanthanated Gold</td>
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<td>0.5 x 175</td>
<td>T0207G2</td>
<td></td>
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<tr>
<td>AWS A5.12 EWLa-1.5</td>
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<td>1.0 x 175</td>
<td>T0407G2</td>
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</tr>
<tr>
<td>ISO 6848 WL15</td>
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<td>1.6 x 175</td>
<td>T1167G2, T1167G2-3</td>
<td></td>
</tr>
<tr>
<td>2/32 x 7&quot;</td>
<td>3/32 x 7&quot;</td>
<td>2.4 x 175</td>
<td>T3327G2, T3327G2-3</td>
<td></td>
</tr>
<tr>
<td>1/8 x 7&quot;</td>
<td>5/32 x 7&quot;</td>
<td>4.0 x 175</td>
<td>T5327G2</td>
<td></td>
</tr>
<tr>
<td>2% Ceriated Gray</td>
<td>0.020 x 7&quot;</td>
<td>0.5 x 175</td>
<td>T0207G2</td>
<td></td>
</tr>
<tr>
<td>AWS A5.12 EWCe-2</td>
<td>0.040 x 7&quot;</td>
<td>1.0 x 175</td>
<td>T0407G2</td>
<td></td>
</tr>
<tr>
<td>(Formerly Orange)</td>
<td>1/16 x 7&quot;</td>
<td>1.6 x 175</td>
<td>T1167G2, T1167G2-3</td>
<td></td>
</tr>
<tr>
<td>AWS A5.12 EWP WP</td>
<td>3/32 x 7&quot;</td>
<td>2.4 x 175</td>
<td>T3327G2, T3327G2-3</td>
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</tr>
<tr>
<td>ISO 6848 WP</td>
<td>1/8 x 7&quot;</td>
<td>3.2 x 175</td>
<td>T187G2, T187G2-3</td>
<td></td>
</tr>
<tr>
<td>Pure</td>
<td>0.020 x 7&quot;</td>
<td>0.5 x 175</td>
<td>T0207G2</td>
<td></td>
</tr>
<tr>
<td>Green</td>
<td>0.040 x 7&quot;</td>
<td>1.0 x 175</td>
<td>T0407G2</td>
<td></td>
</tr>
<tr>
<td>AWS A5.12 EWPS</td>
<td>1/16 x 7&quot;</td>
<td>1.6 x 175</td>
<td>T1167G2, T1167G2-3</td>
<td></td>
</tr>
<tr>
<td>ISO 6848 WP</td>
<td>3/32 x 7&quot;</td>
<td>2.4 x 175</td>
<td>T3327G2, T3327G2-3</td>
<td></td>
</tr>
<tr>
<td>3/32 x 7&quot;</td>
<td>1/8 x 7&quot;</td>
<td>3.2 x 175</td>
<td>T187G2, T187G2-3</td>
<td></td>
</tr>
<tr>
<td>5/32 x 7&quot;</td>
<td>1/8 x 7&quot;</td>
<td>3.2 x 175</td>
<td>T187G2, T187G2-3</td>
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</tr>
<tr>
<td>2% Lanthanated Blue</td>
<td>0.020 x 7&quot;</td>
<td>0.5 x 175</td>
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<tr>
<td>AWS A5.12 EWLa-2</td>
<td>0.040 x 7&quot;</td>
<td>1.0 x 175</td>
<td>T0407G2</td>
<td></td>
</tr>
<tr>
<td>ISO 6848 WL20</td>
<td>1/16 x 7&quot;</td>
<td>1.6 x 175</td>
<td>T1167G2, T1167G2-3</td>
<td></td>
</tr>
<tr>
<td>3/32 x 7&quot;</td>
<td>3/32 x 7&quot;</td>
<td>2.4 x 175</td>
<td>T3327G2, T3327G2-3</td>
<td></td>
</tr>
<tr>
<td>1/8 x 7&quot;</td>
<td>5/32 x 7&quot;</td>
<td>4.0 x 175</td>
<td>T5327G2</td>
<td></td>
</tr>
<tr>
<td>LaYzr™ Chartreuse</td>
<td>0.020 x 7&quot;</td>
<td>0.5 x 175</td>
<td>T0207G2</td>
<td></td>
</tr>
<tr>
<td>AWS A5.12 EWZr-8</td>
<td>0.040 x 7&quot;</td>
<td>1.0 x 175</td>
<td>T0407G2</td>
<td></td>
</tr>
<tr>
<td>ISO 6848 WZ8</td>
<td>1/16 x 7&quot;</td>
<td>1.6 x 175</td>
<td>T1167G2, T1167G2-3</td>
<td></td>
</tr>
<tr>
<td>3/32 x 7&quot;</td>
<td>5/32 x 7&quot;</td>
<td>4.0 x 175</td>
<td>T5327G2</td>
<td></td>
</tr>
</tbody>
</table>

TUNGSTEN STICK-OUT GAUGE

CONSISTENT STICK-OUT ADDS QUALITY TO EVERY WELD

- Great for orbital welders, instructors, weld inspectors
- Insures correct stick-out for gas nozzle being used
- Eliminates tungsten contamination by keeping the tungsten in the gas stream
- Correct stick-out insures undue stress on the ceramic gas nozzle

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P: (253) 954.5820 | F: (253) 939.1746 | TOLL FREE: (800) 426.0877 | www.CKWORLDWIDE.com
TURBO-SHARP® X

Tungsten Electrode Grinder

- Enclosed electrode grinder
- Minimizes grinding dust exposure to both the user and the environment
- Standard head for diameters: .040" (1.0mm), 1/16" (1.6mm), 3/32" (2.4mm), and 1/8" (3.2mm)
- Angles adjustable from 20°—60°
- Consistent tip geometry
- Eliminate grinding wheel contamination

SPECIAL FEATURES:

- Multi-functional cover
  Through a slot in the cover one can flatten the electrode to prepare a truncated cone.
- Setting the angle
  Angles adjustable from 20°—60°
- Grinding disc
  Both sides coated with diamond-powder, giving double wheel life.
- Unbelievable result
  TURBO-SHARP® X allows exact repetition of longitudinal grinding.
- Ergonomic
  TURBO-SHARP® X is optimal with respect to weight and handling.

CONSISTENT RESULTS:
Stepless grinding angles 20°—60°

SPECIFICATIONS

- Voltage: 120V or 230V AC
- Single Phase: 60 Hz
- Power: 400 W
- Amp: 3.5 A
- No Load Speed: 30,000 RPM
- Weight: 3.7 lbs. (1,690 grams)
- Guarantee: 2 years

TURBO-SHARP® X can be equipped with an optional grinder head (TS3-HR).

Using the red head, you can grind electrodes of diameter:
1/8" (3.2mm), 5/32" (4.0mm), 3/16" (4.8mm) and 1/4" (6.4mm)

SHORT TUNGSTEN KIT
FOR USE WITH TS3-HR GRINDER HEAD ONLY

HOLDS SHORTER LENGTH TUNGSTEN

Grind tungstens as short as 3/4" (1.9cm)

INCLUDES:
- .040" (1.0mm), 1/16" (1.6mm) and 3/32" (2.4mm) collets

NOT INCLUDED WITH TURBO-SHARP X TUNGSTEN SHARPENER

ORDER # DESCRIPTION
TS10 120 V GRINDER (Includes TS3-HB)
TS10-230 230 V GRINDER (Includes TS3-HB)
TS3-W REPLACEMENT WHEEL
TS3-HB GRINDER HEAD .040"—1/8" (1.0mm - 3.2mm)
TS3-HR GRINDER HEAD 1/8" (3.2mm), 5/32" (4.0mm), 3/16" (4.8mm) and 1/4" (6.4mm)
TS3-STK SHORT TUNGSTEN KIT (TS3-HR required)

Turbo-Sharp® X is a registered trademark of JAS.
# Tungsten Electrode Characteristics

<table>
<thead>
<tr>
<th>Tungsten</th>
<th>Color Code</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pure</td>
<td>Green</td>
<td>Provides good arc stability for AC welding. Reasonably good resistance to contamination. Lowest current carrying capacity. Least expensive. Maintains a balled end. Used on transformer based machines only.</td>
</tr>
<tr>
<td>2% Ceriated</td>
<td>Gray</td>
<td>Similar performance to thoriated tungsten. Easy arc starting, good arc stability, long life. Possible replacement for thoriated.</td>
</tr>
<tr>
<td>2% Thoriated</td>
<td>Red</td>
<td>Easier arc starting. Higher current capacity. Greater arc stability. High resistance to weld pool contamination. Difficult to maintain balled end on AC.</td>
</tr>
<tr>
<td>1.5% Lanthanated</td>
<td>Gold</td>
<td>Similar performance to thoriated tungsten. Easy arc starting, good arc stability, long life, high current capacity. 1.5% possible replacement for thoriated. 2% possible replacement for Pure.</td>
</tr>
<tr>
<td>2% Lanthanated</td>
<td>Blue</td>
<td>Similar performance to thoriated tungsten. Easy arc starting, good arc stability, long life, high current capacity. 1.5% possible replacement for thoriated. 2% possible replacement for Pure.</td>
</tr>
<tr>
<td>.8% Zirconiated</td>
<td>White</td>
<td>Excellent for AC welding due to favorable retention of balled end, high resistance to contamination, and good arc starting. Preferred when tungsten contamination of weld is intolerable. Possible replacement for Pure.</td>
</tr>
<tr>
<td>LaYz™</td>
<td>Chartreuse*</td>
<td>Best for use on automated or robotic applications. Runs cooler than 2% Thoriated with longer life. Low to medium amperage range.</td>
</tr>
</tbody>
</table>

*Substitute for Purple (Same oxide blend).

---

## Tungsten Electrode Current Ranges

<table>
<thead>
<tr>
<th>Tungsten</th>
<th>Gas Cup (Inside Diameter)</th>
<th>DCEN 70% Penetration</th>
<th>(50/50) Balanced Wave, AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pure</td>
<td>15–80 amps</td>
<td>20–60 amps</td>
<td></td>
</tr>
<tr>
<td>2% Ceriated</td>
<td>15–80 amps</td>
<td>20–60 amps</td>
<td></td>
</tr>
<tr>
<td>2% Thoriated</td>
<td>15–80 amps</td>
<td>20–60 amps</td>
<td></td>
</tr>
<tr>
<td>1.5% Lanthanated</td>
<td>15–80 amps</td>
<td>20–60 amps</td>
<td></td>
</tr>
<tr>
<td>2% Lanthanated</td>
<td>15–80 amps</td>
<td>20–60 amps</td>
<td></td>
</tr>
<tr>
<td>.8% Zirconiated</td>
<td>15–80 amps</td>
<td>20–60 amps</td>
<td></td>
</tr>
<tr>
<td>LaYz™</td>
<td>15–80 amps</td>
<td>20–60 amps</td>
<td></td>
</tr>
</tbody>
</table>

All values are based on the use of Argon as a shielding gas. Other current values may be employed depending on the shielding gas, type of equipment, and application. DCEN = Direct Current Electrode Negative (Straight Polarity).
<table>
<thead>
<tr>
<th>Gas Type</th>
<th>30° Angle .005&quot; FLAT</th>
<th>60° Angle .010&quot; FLAT</th>
<th>90° Angle .020&quot; FLAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>100Ar</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>75Ar-25He</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>50Ar-50He</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>25Ar-75He</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>100He</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>95Ar-5H₂</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
</tbody>
</table>

- **30° Angle .005" FLAT**
- **60° Angle .010" FLAT**
- **90° Angle .020" FLAT**
Welding Parameters

**Aluminum (ACHF)**

<table>
<thead>
<tr>
<th>Metal Gauge</th>
<th>Joint Type</th>
<th>Tungsten Size</th>
<th>Filler Rod Size</th>
<th>CUP Size</th>
<th>Shield Gas Flow</th>
<th>Welding Amperes</th>
<th>TRAVEL SPEED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/16&quot; (1.6mm)</td>
<td>BUTT</td>
<td>1/16&quot; (1.6mm)</td>
<td>1/16&quot; (1.6mm)</td>
<td>4, 5, 6</td>
<td>ARGON 15 (7)</td>
<td>60–90</td>
<td>50 (307.2mm)</td>
</tr>
<tr>
<td></td>
<td>FILLET</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>70–90</td>
<td>50 (256mm)</td>
</tr>
<tr>
<td>1/8&quot; (3.2mm)</td>
<td>BUTT</td>
<td>3/32&quot; (2.4mm)</td>
<td>3/32&quot; (2.4mm)</td>
<td>6, 7</td>
<td>ARGON 17 (6)</td>
<td>125–145</td>
<td>50 (307.2mm)</td>
</tr>
<tr>
<td></td>
<td>FILLET</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>140–160</td>
<td>50 (256mm)</td>
</tr>
<tr>
<td>3/16&quot; (4.8mm)</td>
<td>BUTT</td>
<td>1/8&quot; (3.2mm)</td>
<td>1/8&quot; (3.2mm)</td>
<td>7, 8</td>
<td>ARGON/HELIUM 21 (10)</td>
<td>195–220</td>
<td>50 (256mm)</td>
</tr>
<tr>
<td></td>
<td>FILLET</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>210–240</td>
<td>50 (204.8mm)</td>
</tr>
<tr>
<td>1/4&quot; (6.4mm)</td>
<td>BUTT</td>
<td>3/16&quot; (4.8mm)</td>
<td>1/8&quot; (3.2mm)</td>
<td>8, 10</td>
<td>ARGON/HELIUM 25 (12)</td>
<td>260–300</td>
<td>50 (256mm)</td>
</tr>
<tr>
<td></td>
<td>FILLET</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>280–320</td>
<td>50 (204.8mm)</td>
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</table>

**Titanium (DCSP)**

<table>
<thead>
<tr>
<th>Metal Gauge</th>
<th>Joint Type</th>
<th>Tungsten Size</th>
<th>Filler Rod Size</th>
<th>CUP Size</th>
<th>Shield Gas Flow</th>
<th>Welding Amperes</th>
<th>TRAVEL SPEED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/16&quot; (1.6mm)</td>
<td>BUTT</td>
<td>1/16&quot; (1.6mm)</td>
<td>NONE</td>
<td>4, 5, 6</td>
<td>ARGON 15 (7)</td>
<td>90–110</td>
<td>50 (256mm)</td>
</tr>
<tr>
<td></td>
<td>FILLET</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>110–150</td>
<td>50 (204.8mm)</td>
</tr>
<tr>
<td>1/8&quot; (3.2mm)</td>
<td>BUTT</td>
<td>3/32&quot; (2.4mm)</td>
<td>1/16&quot; (1.6mm)</td>
<td>5, 6, 7</td>
<td>ARGON 15 (7)</td>
<td>190–220</td>
<td>50 (230.4mm)</td>
</tr>
<tr>
<td></td>
<td>FILLET</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>210–250</td>
<td>50 (179.2mm)</td>
</tr>
<tr>
<td>3/16&quot; (4.8mm)</td>
<td>BUTT</td>
<td>3/32&quot; (2.4mm)</td>
<td>1/8&quot; (3.2mm)</td>
<td>6, 7, 8</td>
<td>ARGON 20 (10)</td>
<td>220–250</td>
<td>50 (204.8mm)</td>
</tr>
<tr>
<td></td>
<td>FILLET</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>240–280</td>
<td>50 (179.2mm)</td>
</tr>
<tr>
<td>1/4&quot; (6.4mm)</td>
<td>BUTT</td>
<td>1/8&quot; (3.2mm)</td>
<td>1/8&quot; (3.2mm)</td>
<td>8, 10</td>
<td>ARGON 30 (15)</td>
<td>275–310</td>
<td>50 (204.8mm)</td>
</tr>
<tr>
<td></td>
<td>FILLET</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>290–340</td>
<td>50 (179.2mm)</td>
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</tbody>
</table>

**Magnesium (ACHF)**

<table>
<thead>
<tr>
<th>Metal Gauge</th>
<th>Joint Type</th>
<th>Tungsten Size</th>
<th>Filler Rod Size</th>
<th>CUP Size</th>
<th>Shield Gas Flow</th>
<th>Welding Amperes</th>
<th>TRAVEL SPEED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/16&quot; (1.6mm)</td>
<td>BUTT</td>
<td>1/16&quot; (1.6mm)</td>
<td>3/32&quot; (2.4mm)</td>
<td>5, 6</td>
<td>ARGON 13 (5)</td>
<td>60</td>
<td>10 (512mm)</td>
</tr>
<tr>
<td></td>
<td>FILLET</td>
<td></td>
<td>1/8&quot; (3.2mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/8&quot; (3.2mm)</td>
<td>BUTT</td>
<td>3/32&quot; (2.4mm)</td>
<td>1/8&quot; (3.2mm)</td>
<td>7, 8</td>
<td>ARGON 19 (9)</td>
<td>115</td>
<td>17 (435.2mm)</td>
</tr>
<tr>
<td></td>
<td>FILLET</td>
<td></td>
<td>5/32&quot; (4.0mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/4&quot; (6.4mm)</td>
<td>BUTT</td>
<td>3/16&quot; (4.8mm)</td>
<td>5/32&quot; (4.0mm)</td>
<td>8</td>
<td>ARGON 25 (12)</td>
<td>100–130</td>
<td>22 (563.2mm)</td>
</tr>
<tr>
<td></td>
<td>FILLET</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>110–135</td>
<td>22 (512mm)</td>
</tr>
<tr>
<td>1/2&quot; (12.8mm)</td>
<td>BUTT</td>
<td>1/4&quot; (6.4mm)</td>
<td>3/16&quot; (4.8mm)</td>
<td>10</td>
<td>ARGON 35 (17)</td>
<td>260</td>
<td>10 (256mm)</td>
</tr>
</tbody>
</table>

**Welding Aluminum**

The use of TIG welding for aluminum has many advantages for both manual and automatic processes. Filler metal can be either wire or rod and should be compatible with the base alloy. Filler metal must be dry, free of oxides, grease, or other foreign matter. If filler metal becomes damp, heat for 2 hours at 250°F (121°C) before using. Although ACHF is recommended, DCSP has been successful up to 3/32" (2.4mm), DCSP with helium shield gas is successful in mechanized applications.

**Welding Titanium**

Small amounts of impurities, particularly oxygen and nitrogen, cause embrittlement of molten or hot titanium when above 500°F (260°C). The molten weld metal in the heat-affected zones must be shielded by a protective blanket of inert gas. Titanium requires a strong, positive pressure of argon or helium as a backup on the root side of the weld, as well as long, trailing, protective tail of argon gas to protect the metal while cooling. Purge chambers and trailing shields are available from CK Worldwide to assist in providing quality results.

**Welding Magnesium**

Magnesium was one of the first metals to be welded commercially by TIG. Magnesium alloys are in three groups, they are: (1) aluminum-zinc-magnesium, (2) aluminum-magnesium, and (3) maganese-magnesium. Since magnesium absorbs a number of harmful ingredients and oxidize rapidly when subjected to welding heat, TIG welding in an inert gas atmosphere is distinctly advantageous. The welding of magnesium is similar, in many respects, to the welding of aluminum. Magnesium requires a positive pressure of argon as a backup on the root side of the weld.
### WELDING DEOXIDIZED COPPER

Where extensive welding is to be done, the use of deoxidized (oxygen-free) copper is preferable over electrolytic tough pitch copper. Although TIG welding has been used occasionally to weld zinc-bearing copper alloys, such as brass and commercial bronzes, it is not recommended because the shielding gas does not suppress the vaporization of zinc. For the same reason zinc-bearing filler rods should not be used. There is some preference of helium for the inert atmosphere in welding thickness above 1/8” (3.2mm) because of the improved weld metal fluidity. Pre-heating recommendations should be followed.

### STAINLESS STEEL (DCSP)

<table>
<thead>
<tr>
<th>METAL GAUGE</th>
<th>JOINT TYPE</th>
<th>TUNGSTEN SIZE</th>
<th>FILLER ROD SIZE</th>
<th>CUP SIZE</th>
<th>SHIELD GAS FLOW TYPE</th>
<th>CFH (L/MM)</th>
<th>PSI</th>
<th>WELDING AMPERES</th>
<th>TRAVEL SPEED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/16” (1.6mm)</td>
<td>BUTT FILLET</td>
<td>1/16” (1.6mm)</td>
<td>1/16” (1.6mm)</td>
<td>4, 5, 6</td>
<td>ARGON 18 (9)</td>
<td>15</td>
<td>110-140</td>
<td>12” (307.2mm)</td>
<td></td>
</tr>
<tr>
<td>1/16” (1.6mm)</td>
<td>BUTT FILLET</td>
<td>1/16” (1.6mm)</td>
<td>1/16” (1.6mm)</td>
<td>4, 5, 6</td>
<td>ARGON 18 (9)</td>
<td>15</td>
<td>130-150</td>
<td>10” (256mm)</td>
<td></td>
</tr>
<tr>
<td>1/8” (3.2mm)</td>
<td>BUTT FILLET</td>
<td>3/32” (2.4mm)</td>
<td>3/32” (2.4mm)</td>
<td>4, 5, 6</td>
<td>ARGON 18 (9)</td>
<td>15</td>
<td>175-225</td>
<td>11” (256.6mm)</td>
<td></td>
</tr>
<tr>
<td>1/8” (3.2mm)</td>
<td>BUTT FILLET</td>
<td>3/32” (2.4mm)</td>
<td>3/32” (2.4mm)</td>
<td>4, 5, 6</td>
<td>ARGON 18 (9)</td>
<td>15</td>
<td>200-250</td>
<td>9” (230.4mm)</td>
<td></td>
</tr>
<tr>
<td>3/16” (4.8mm)</td>
<td>BUTT FILLET</td>
<td>1/8” (3.2mm)</td>
<td>1/8” (3.2mm)</td>
<td>8, 10</td>
<td>HELIUM 36 (17.5)</td>
<td>15</td>
<td>190-225</td>
<td>10” (256mm)</td>
<td></td>
</tr>
<tr>
<td>3/16” (4.8mm)</td>
<td>BUTT FILLET</td>
<td>1/8” (3.2mm)</td>
<td>1/8” (3.2mm)</td>
<td>8, 10</td>
<td>HELIUM 36 (17.5)</td>
<td>15</td>
<td>205-250</td>
<td>8” (204.8mm)</td>
<td></td>
</tr>
<tr>
<td>1/4” (6.4mm)</td>
<td>BUTT (2) FILLET</td>
<td>3/16” (4.8mm)</td>
<td>3/16” (4.8mm)</td>
<td>8, 10</td>
<td>HELIUM 36 (17.5)</td>
<td>15</td>
<td>225-260</td>
<td>9” (230.4mm)</td>
<td></td>
</tr>
<tr>
<td>1/4” (6.4mm)</td>
<td>BUTT (2) FILLET</td>
<td>3/16” (4.8mm)</td>
<td>3/16” (4.8mm)</td>
<td>8, 10</td>
<td>HELIUM 36 (17.5)</td>
<td>15</td>
<td>250-280</td>
<td>7” (179.2mm)</td>
<td></td>
</tr>
</tbody>
</table>

### WELDING STAINLESS STEEL

In TIG welding of stainless steel, welding rods having the AWS-ASTM prefixes of E or ER can be used as filler rods. However, only bare uncoted rods should be used. Light gauge metals less then 1/16” (1.6mm) thick should always be welded with DCSP using argon gas. Follow the normal precautions for welding stainless such as: Clean surfaces; dry electrodes; use only stainless steel tools and brushes, keep stainless from coming in contact with other metals.

### LOW ALLOY STEEL (DCSP)

<table>
<thead>
<tr>
<th>METAL GAUGE</th>
<th>JOINT TYPE</th>
<th>TUNGSTEN SIZE</th>
<th>FILLER ROD SIZE</th>
<th>CUP SIZE</th>
<th>SHIELD GAS FLOW TYPE</th>
<th>CFH (L/MM)</th>
<th>PSI</th>
<th>WELDING AMPERES</th>
<th>TRAVEL SPEED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/16” (1.6mm)</td>
<td>BUTT FILLET</td>
<td>1/16” (1.6mm)</td>
<td>1/16” (1.6mm)</td>
<td>4, 5, 6</td>
<td>ARGON 15 (7)</td>
<td>20</td>
<td>95-135</td>
<td>15° (384mm)</td>
<td></td>
</tr>
<tr>
<td>1/16” (1.6mm)</td>
<td>BUTT FILLET</td>
<td>1/16” (1.6mm)</td>
<td>1/16” (1.6mm)</td>
<td>4, 5, 6</td>
<td>ARGON 15 (7)</td>
<td>20</td>
<td>145-205</td>
<td>11° (258.6mm)</td>
<td></td>
</tr>
<tr>
<td>1/8” (3.2mm)</td>
<td>BUTT FILLET</td>
<td>1/16” (1.6mm)</td>
<td>1/16” (1.6mm)</td>
<td>4, 5, 6</td>
<td>ARGON 15 (7)</td>
<td>20</td>
<td>210-260</td>
<td>10° (256mm)</td>
<td></td>
</tr>
<tr>
<td>3/16” (4.8mm)</td>
<td>BUTT FILLET</td>
<td>3/32” (2.4mm)</td>
<td>3/32” (2.4mm)</td>
<td>4, 5, 6</td>
<td>ARGON 16 (6.5)</td>
<td>20</td>
<td>210-260</td>
<td>10° (256mm)</td>
<td></td>
</tr>
<tr>
<td>3/16” (4.8mm)</td>
<td>BUTT FILLET</td>
<td>3/32” (2.4mm)</td>
<td>3/32” (2.4mm)</td>
<td>4, 5, 6</td>
<td>ARGON 16 (6.5)</td>
<td>20</td>
<td>240-300</td>
<td>10° (256mm)</td>
<td></td>
</tr>
<tr>
<td>1/4” (6.4mm)</td>
<td>BUTT (2) FILLET</td>
<td>1/8” (3.2mm)</td>
<td>1/8” (3.2mm)</td>
<td>5/32” (4.0mm)</td>
<td>ARGON 18 (8.5)</td>
<td>20</td>
<td>240-300</td>
<td>10° (256mm)</td>
<td></td>
</tr>
</tbody>
</table>
## Troubleshooting Guide

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Excessive Electrode Consumption</strong></td>
<td>Inadequate gas flow</td>
<td>Increase gas flow</td>
</tr>
<tr>
<td></td>
<td>Improper size electrode for current required</td>
<td>Use larger electrode</td>
</tr>
<tr>
<td></td>
<td>Operating of reverse polarity</td>
<td>Use larger electrode or change polarity</td>
</tr>
<tr>
<td></td>
<td>Electrode contamination</td>
<td>Remove contaminated portion, then prepare again</td>
</tr>
<tr>
<td></td>
<td>Excessive heating inside torch</td>
<td>Replace collect, try wedge collet or reverse collet</td>
</tr>
<tr>
<td></td>
<td>Electrode oxidizing during cooling</td>
<td>Increase gas post flow time to 1 sec. per 10 amps</td>
</tr>
<tr>
<td></td>
<td>Shield gas incorrect</td>
<td>Change to proper gas (no oxygen or Co2)</td>
</tr>
<tr>
<td></td>
<td>Incorrect voltage (arc too long)</td>
<td>Maintain short arc length</td>
</tr>
<tr>
<td></td>
<td>Current too low for electrode size</td>
<td>Use smaller electrode or increase current</td>
</tr>
<tr>
<td></td>
<td>Electrode contaminated</td>
<td>Remove contaminated portion, then prepare again</td>
</tr>
<tr>
<td></td>
<td>Joint too narrow</td>
<td>Open joint groove</td>
</tr>
<tr>
<td></td>
<td><strong>Erratic Arc</strong></td>
<td>Contaminated shield gas, dark stains on the electrode or weld bead indicate contamination</td>
</tr>
<tr>
<td></td>
<td>Base metal is oxidized, dirty or oily</td>
<td>Use appropriate chemical cleaners, wire brush or abrasives prior to welding.</td>
</tr>
<tr>
<td></td>
<td><strong>Inclusion of Tungsten or Oxides in Weld</strong></td>
<td>Poor scratch starting technique</td>
</tr>
<tr>
<td></td>
<td>Excessive current for tungsten size used.</td>
<td>Reduce current or use larger electrode</td>
</tr>
<tr>
<td></td>
<td>Accidental contact of electrode with puddle</td>
<td>Maintain proper arc length</td>
</tr>
<tr>
<td></td>
<td>Accidental contact of electrode to filler rod</td>
<td>Maintain a distance between electrode and filler metal</td>
</tr>
<tr>
<td></td>
<td>Using excessive electrode extension</td>
<td>Reduce electrode extension to recommended limits</td>
</tr>
<tr>
<td></td>
<td>Inadequate shielding or excessive drafts</td>
<td>Increase gas flow, shield arc from wind, or use gas lens</td>
</tr>
<tr>
<td></td>
<td>Wrong gas</td>
<td>Do not use Ar-02 or Ar–CO2 GMA (MIG) gases for TIG welding</td>
</tr>
<tr>
<td></td>
<td>Heavy surface oxides not being removed</td>
<td>Use ACHF, adjust balance control for maximum cleaning, or wire brush and clean the weld joint prior to welding.</td>
</tr>
<tr>
<td></td>
<td><strong>Porosity in Weld Deposit</strong></td>
<td>Entrapped impurities, hydrogen, air, nitrogen, water vapor</td>
</tr>
<tr>
<td></td>
<td>Defective gas hose or loose connection</td>
<td>Check hoses and connections for leaks</td>
</tr>
<tr>
<td></td>
<td>Filler material is damp (particularly aluminum)</td>
<td>Dry filler metal in over prior to welding</td>
</tr>
<tr>
<td></td>
<td>Filler material is oily or dusty</td>
<td>Replace filler metal</td>
</tr>
<tr>
<td></td>
<td>Alloy impurities in the base metal such as sulphur, phosphorus, lead and zinc</td>
<td>Change to a different alloy composition which is weldable. These impurities can cause a tendency to crack when hot.</td>
</tr>
<tr>
<td></td>
<td>Excessive travel speed with rapid freezing of weld trapping gases before they escape</td>
<td>Lower the travel speed</td>
</tr>
<tr>
<td></td>
<td><strong>Cracking in Welds</strong></td>
<td>Contaminated gas shield</td>
</tr>
<tr>
<td></td>
<td><strong>Inadequate Shielding</strong></td>
<td>Hot cracking in heavy section or with metals which are hot shorts</td>
</tr>
<tr>
<td></td>
<td>Crater cracks due to improperly breaking the arc or terminating the weld at the joint edge</td>
<td>Reverse direction and weld back into previous weld at edge. Use remote or foot control to manually down slope current.</td>
</tr>
<tr>
<td></td>
<td>Post weld cold cracking, due to excessive joint restraint, rapid cooling, or hydrogen embrittlementment</td>
<td>Preheat prior to welding, use pure to non-contaminated gas. Increase the bead size. Prevent craters or notches. Change the weld joint design.</td>
</tr>
<tr>
<td></td>
<td>Centerline cracks in single pass welds</td>
<td>Increase bead size. Decrease root opening, use preheat, prevent craters.</td>
</tr>
<tr>
<td></td>
<td>Underbead cracking from brittle microstructure</td>
<td>Eliminate sources of hydrogen, joint restraint, and use preheat.</td>
</tr>
<tr>
<td></td>
<td><strong>Gas Saver™, Safe-Loc™, Flex-Loc™, Super-Flex™, Trim-Line™, Max-Flo™,</strong> <strong>Fail-Safe™, Steady-Grip™</strong> and <strong>LaYZr™</strong> are trademarks of CK Worldwide, Inc.**</td>
<td><strong>TRADEMARK NOTICES:</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Gas Flow Blockage or Leak in Hoses or Torch</strong></td>
<td>Gas flow blockage or leak in hoses or torch</td>
</tr>
<tr>
<td></td>
<td>Excessive travel speed exposes molten weld to atmospheric contamination</td>
<td>Use slower travel speed or carefully increase the flow rate to a safe level below creating excessive turbulence. Use trailing shield cup.</td>
</tr>
<tr>
<td></td>
<td>Wind or drafts</td>
<td>Set up screens around the weld area</td>
</tr>
<tr>
<td></td>
<td>Excessive electrode stickout</td>
<td>Reduce electrode stickout. Use a larger size cup.</td>
</tr>
<tr>
<td></td>
<td>Excessive turbulence in gas stream</td>
<td>Change to gas saver parts or gas lens parts.</td>
</tr>
<tr>
<td></td>
<td><strong>Arc Blow</strong></td>
<td>Induced magnetic field from DC weld current</td>
</tr>
<tr>
<td></td>
<td>Arc is unstable due to magnetic influences</td>
<td>Reduce weld current and use arc length as short as possible.</td>
</tr>
<tr>
<td></td>
<td>Short water cooled leads life</td>
<td>Verify coolant flow direction, return flow must be on the power cable lead.</td>
</tr>
<tr>
<td></td>
<td>Cup shattering or breaking in use</td>
<td>Change cup size or type, change tungsten position, refer to CK Worldwide technical specifications available at <a href="http://www.ckworldwide.com">www.ckworldwide.com</a></td>
</tr>
<tr>
<td></td>
<td>Short collet life</td>
<td>Ordinary style is split and twists or jams, change to wedge style.</td>
</tr>
<tr>
<td></td>
<td>Short torch head life</td>
<td>Do not operate beyond rated capacity, use water cooled model, do not bend rigid torches</td>
</tr>
<tr>
<td></td>
<td><strong>Gas Hoses Ballooning, Bursting or Blowing Off While Hot</strong></td>
<td>Incorrect flowmeter. TIG flowmeters operate at 35 psi with low flows. MIG flowmeters operate with high flows at 65 psi or more.</td>
</tr>
</tbody>
</table>

CONNECT WITH US ON:

Phone: 1.800.426.0877  Fax: 1.800.327.5038
CK Worldwide, Inc., PO Box 1636, Auburn, WA 98071