AMERICAN WELDQUIP

SERVICE QUALITY SOLUTIONS

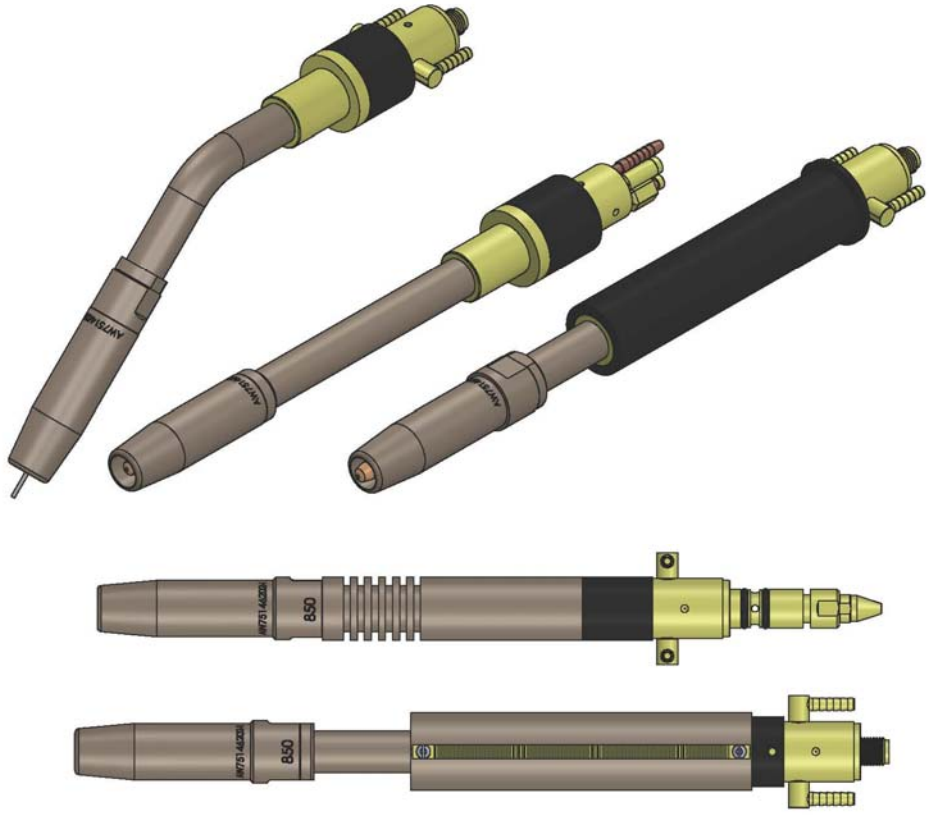
Water-Cooled Automatic MIG Torches

For Models

550A & 600A

STANDARD/BARREL/RACK AND TAM MOUNTS

(450A discontinued; parts still available; see appendix A-1)



This Product is
MADE IN THE U.S.A.

INSTALLATION, OPERATIONS AND REPLACEMENT PARTS

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INTRODUCTION

Thank you for purchasing an AMERICAN WELDQUIP product. The AMERICAN WELDQUIP product you have purchased has been carefully manufactured, assembled, and fully tested. This manual contains information on the installation, operation, maintenance, and replacement part breakdown. Please read, understand, and follow all safety instructions, warnings, and procedures. Keep this manual handy for referencing installation, operation, maintenance, and part ordering information. While every precaution has been taken as to the accuracy in this manual, AMERICAN WELDQUIP assumes no responsibility for errors or omissions. AMERICAN WELDQUIP assumes no liability for damages resulting from the use of the information contained in this manual. AMERICAN WELDQUIP shall have no liability to the buyer for consequential damages or expenses by any defect whatsoever.

WARRANTY

AMERICAN WELDQUIP MIG guns and parts are warranted to be free of defects in material and/or workmanship for the period listed below. For any product found to be defective under normal use, AMERICAN WELDQUIP at our option, will repair, replace, or issue a credit for the value of the defective product. All warranty claims must be submitted by the original purchaser. Use of non-genuine AMERICAN WELDQUIP parts and/or consumables may damage and/or severely limit the performance of the equipment which may limit or void any warranties. AMERICAN WELDQUIP will not assume responsibility for incidental damages or expenses related to any defect. This warranty does not cover damage caused by misuse or abuse, accident, alteration of product, improper installation, misapplication, lack of reasonable care and maintenance, unauthorized repairs or modifications, loss of use while at a repair facility or other conditions that are beyond the control of AMERICAN WELDQUIP.

A Return Merchandise Authorization Number (RMA#) must be attained from the factory for any product being returned for Warranty Repair or Replacement. All returned products must be shipped freight prepaid by the sender. No-charge replacements, repaired products, or credit will be issued once the returned product has been evaluated and warranty condition has been verified. If an immediate replacement is required before proper warranty evaluation, a purchase order number is required, and the goods will be invoiced. A credit will be issued once it is determined that a warranty condition exists.

STANDARD WARRANTY

All Semi-Automatic, Automatic, Robotic MIG Torches and Components…….....= 120 Days

MIG Torch Trigger Switches (Contacts only) - Excludes Smoke Extraction……= LIFETIME

Robotic Nozzle Cleaning Stations, Wire Cutter……..……..... = 6 Months

Robotic Peripherals, ArcSafe, Gun Mounts…….……..... = 90 Days

TIG POINT Tungsten Electrode Grinders…….……..... = 90 Days

LIMITED EXTENDED WARRANTY PROTECTION

This limited extended warranty protection expands coverage to loyal customers who use all GENUINE AMERICAN WELDQUIP consumables. Customers filing a claim under the extended warranty will need to prove, by providing past invoices, that they have been purchasing and using Genuine AMERICAN WELDQUIP consumables.

All Semi-Automatic, Automatic, Robotic MIG Torches and Components……..... = 1 YEAR

MIG Torch Trigger Switches (Contacts only) -Excludes Smoke Extraction…….. = LIFETIME

MIG Torch Handles……..……..…..... = LIFETIME

Robotic Nozzle Cleaning Stations, Wire Cutter……= 1 Year w/Exclusive Quip-Mist Use

Robotic Peripherals, ArcSafe, Gun Mounts…….... = 90 Days

TIG POINT Tungsten Electrode Grinders……..... = 90 Days

ROHS COMPLIANT

RoHS (Restriction of Hazardous Substances) is an environmental law which addresses the European Union directive 2002/95/EC known as the RoHS Directive. The RoHS directive restricts the use of hazardous substances listed below in electrical and electronic equipment. While it is not a requirement to meet the directive in the United States, currently, AMERICAN WELDQUIP INC. feels this is an important part of our "Go Green initiative. We have taken all reasonable steps to try to ensure the supporting evidence regarding the absence of the restricted substances to support RoHS compliance.

For reference, the maximum concentration values of the restricted substances by weight in homogenous materials are:

Lead/Lead Components……-0.1%

Mercury……-0.1%

Hexavalent Chromium……-0.1%

Polybrominated Biphenyls (PBBs)……-0.1%

Polybrominated Diphenyl Ethers (PBDEs)…….....-0.1%

Cadmium……-0.01%

For RoHS Certification of Compliance Letter on a particular product please visit our website – www.weldquip.com or email us at technical@weldquip.com or call 330-239-0317.

SAFETY PRECAUTIONS – READ BEFORE USING

Before installing, operating, or performing maintenance please read the safety precautions below. Failure to observe safety precautions can result in injury or death.

Read and follow the Owner's Manual carefully before installing, operating, or servicing equipment. Read and understand all safety information.

CALIFORNIA PROPOSITION 65 WARNINGS

This product, when used for welding and cutting, can produce fumes or gases which contain chemicals known to cause birth defects and cancer. (California Health & Safety Code Section 25249.5 et seq.) **WASH HANDS AFTER HANDLING**

EMF – ELECTRICAL AND MAGNETIC FIELDS MAY BE DANGEROUS

Electrical current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding current creates an EMF field around welding cables and welding machines.

WARNING - EMF fields may interfere with some pacemakers and other medical implants. Implanted medical device wearers should consult their doctor before operating or going near any arc welding applications. In addition, exposure to EMF fields in welding may have other unknown health effects.

- Welders should use the below procedures to minimize the exposure to EMF fields from the welding circuit.
- Route the cables close together. Secure by twisting, taping, or using a cable cover to keep together.
- Never coil, wrap, or drape welding cables around your body.
- Do not place your body between welding cables. Arrange so that cables are on one side and away from the operator.
- Connect the work clamp (ground) to the workpiece as close as possible to the area to be welded.
- Do not sit, lean, and stand next to the welding power source.
- Do not breathe the fumes and gases as they can cause asphyxiation.

FUMES AND GASES CAN BE DANGEROUS

WARNING - WELDING AND CUTTING PRODUCE FUMES AND GASES THAT ARE HAZARDOUS TO YOUR HEALTH

Fumes and gases generated from welding can cause severe injury to respiratory system and even death. In poorly vented areas it is required to properly ventilate the area and/or use local forced ventilation or other fume control equipment at the arc to remove welding and cutting fumes and gases.

The recommended way to determine adequate ventilation is to sample for the composition and quantity of fumes and gases to which personnel are exposed. The worker exposer level should be checked initially and periodically thereafter to maintain applicable OSHA PEL and ACGIH TVL limits.

- In a poorly ventilated area, it is necessary to wear an approved air-supplied respirator.

- Always read and understand the Safety Data Sheets (SDSs) and the manufacturer's instructions for adhesives, coatings, cleaners, consumables, coolants, degreasers, fluxes, and metals.
- Always have a trained watchperson nearby. Welding and cutting fumes and gases can displace air and lower the oxygen level causing injury or death. Be sure the breathing air is safe.
- Do not weld or cut in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapors to form highly toxic and irritating gases.
- Do not weld or cut on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.

ELECTRIC SHOCK CAN KILL

WARNING - ELECTRICAL SHOCK CAN KILL. DO NOT TOUCH LIVE ELECTRICAL PARTS AND/OR USE IN DAMP LOCATIONS.

The electrode and work (ground) circuit are electrically "HOT" whenever the welding equipment is on. Do not touch these electrically live parts with your bare skin or wet/damp clothing. Wear dry, hole-free gloves. Incorrectly installed or improperly grounded equipment is a hazard.

Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work or ground.

Additional safety precautions are required when any of the following electrically hazardous conditions are present: in damp locations or while wearing wet clothing; on metal structures such as floors, gratings, or scaffolds; when in cramped positions such as sitting, kneeling, or lying; or when there is a high risk of unavoidable or accidental contact with the workpiece or ground. For these conditions, use the following equipment in order presented: 1) a semi-automatic DC constant voltage, 2) a DC manual (stick) welder or 3) an AC welder with reduced open-circuit voltage. In most situations, use of a DC constant voltage wire welder is recommended and do not work alone!

- Disconnect input power or stop engine before installing or servicing this equipment. Lockout/tag out input power according to OSHA 29 CFR 1910.147 (see Safety Standards).
- Properly install ground and operate this equipment according to its Owner's Manual and national, state/provincial, and local codes.
- Always verify the supply ground. Make sure that input power cord ground wire is properly connected to ground terminal in disconnect box or that cord plug is connected to a properly grounded receptacle outlet.
- Keep cords dry, free of oil and grease and protected from hot metal and sparks.
- Frequently inspect input power cord for damage or bare wiring. Replace cord immediately if damaged. Bare wiring can kill.
- Turn off all equipment when not in use.
- Do not use worn, damaged, undersized, or poorly spliced cables. It is illegal to use electrical tape to repair torch power cable or ground cable that has damaged outer insulation. The cable must be replaced.
- Do not drape cables over your body.

- Do not touch electrode if you are in contact with the work, ground, or another electrode from a different machine.
- Do not touch electrode holders connected to two welding machines at the same time since double open circuit voltage will be present.
- Use only well-maintained equipment. Repair or replace damaged parts at once. Maintain unit according to manual.
- Wear a safety harness if working above floor level.
- Keep all panels and covers securely in place.
- Clamp work cable with good metal-to-metal contact to workpiece or worktable as near the weld as practical.
- Do not connect more than one electrode or work cable to any single weld output terminal. Disconnect cable for process when not in use.

ARC RAYS HAZARDS

WARNING – A WELDING ARC EMITS ULTRAVIOLET (UV) AND OTHER RADIATION AND CAN CAUSE SERIOUS INJURY TO UNPROTECTED SKIN AND EYES.

Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding. Headshield and filter lens should conform to ANSI Z87. I standards.

Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.

Protect other nearby personnel with suitable, non-flammable screening and/or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.

WELDING AND CUTTING CAN CAUSE FIRE OR EXPLOSION

WARNING – Welding and cutting produces sparks that fly off from the arc and can cause fires and/or explosions.

- Welding or cutting on closed containers, such as tanks, drums or pipes can cause them to blow up. Sparks can fly off from the welding or cutting arc. The flying sparks, hot work piece and hot equipment can cause fires and burns.
- Accidental contact of electrode to metal objects can cause sparks, explosion, overheating or fire. Check and be sure the area is safe before doing any welding or cutting.
- Do not weld or cut where flying sparks can strike flammable material.
- Remove all flammables and fire hazards from the welding area. If this is not possible, tightly cover them with approved covers to prevent the welding sparks from starting a fire.
- When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.
- Be alert that welding sparks and hot materials from welding and cutting can easily go through small cracks and openings and cause a fire in the adjacent areas.

Follow requirements in OSHA 1910.252 (a) (2) (iv) and NFPA 51B for hot work and have a fire watcher and extinguisher nearby.

- Do not heat, cut, or weld tanks, drums or containers that have held combustibles until the proper steps have been taken to ensure that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been "cleaned." For information, purchase "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances," AWS F4.1 from the American Welding Society.
- Do not weld or cut where the atmosphere may contain flammable dust, gas, or liquid vapors (such as gasoline).
- Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuff-less trousers, high shoes, and a cap over your hair. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses with side shields when in a welding area.
- Connect work cable to the work as close to the welding or cutting area as practical to prevent welding or cutting current from traveling long, possibly unknown paths and causing electric shock, sparks, and fire hazards.
- Do not use welder to thaw frozen pipes.
- Remove any combustibles, such as a butane lighter or matches, from your person before doing any welding or cutting.
- Inspect area to ensure it is free of sparks, glowing embers, and flames after work is complete.

CYLINDERS CAN EXPLODE IF DAMAGED

WARNING – Compressed gas cylinders contain gas under high pressure and/or flammable gas. If damaged, the cylinder can explode.

- Use only compressed gas cylinders containing the correct shielding gas for the process used and properly operating regulators designed for the gas and pressure used. All hoses, fittings, etc. should be suitable for the application and maintained in good condition.
- Always keep cylinders in an upright position securely chained to an undercarriage or fixed support.
- Cylinders should be located away from areas where they may be struck or subjected to physical damage and a safe distance from arc welding or cutting operations and any other source of heat, sparks, or flame.
- Never allow the electrode, electrode holder or any other electrically "hot" parts to touch a cylinder.
- Keep your head and face away from the cylinder valve outlet when opening the cylinder valve.
- Valve protection caps should always be in place and hand tight except when the cylinder is in use or connected for use.
- Read and follow the instructions on compressed gas cylinders, associated equipment, and CGA publication P-l, "Precautions for Safe Handling of Compressed Gases in Cylinders," available from the Compressed Gas Association, 14501 George Carter Way Chantilly, VA 20151.

PRINCIPAL SAFETY STANDARDS

- *Safety in Welding, Cutting and Allied Processes, ANSI Standard Z49.*1 – available for download from the American Welding Society website at www.aws.org.
- CSA Standard W117.2 – available from Canadian Standards Association, Standards Sales, 5060 Spectrum Way, Suite 100, Ontario, Canada L4W 5NS or website – www.csa-international.org.
- *Nation Electric Code, NFPA Standard 70* – available from National Fire Protection Association, Quincy, MA 02269, or website – www.nfpa.org.
- *Safe Practices For Occupational And Educational Eye and Face Protection, ANSI Standard Z87.1* – available from the American National Standards Institute, 25 West 43rd Street, New York, NY 10036. Website – www.ansi.org.
- *OSHA, Occupational Safety and Health Standard for General Industry,* Title 29, Code of Federal Regulations, Part 1910, Subpart Q and Part 1926, Subpart J available from U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburg, PA 15250. Website – www.osha.gov.

Automatic Welding Torches

FEATURES

AMERICAN WELDQUIP torches have been designed with advanced features and benefits to include:

Durability – Heavy-walled gooseneck design helps with heat sink dissipation.

Robust Design – Provides unparalleled resistance to bending in "crash situations."

Nozzle – Heavy duty, thread on nozzle prevents the nozzle from coming loose.

Consumables – Common consumables across AMERICAN WELDQUIP torches alleviate inventory requirements.

Strain- relief – Our spring strain-relief prevents the power cable from being over bent prolonging its lifetime while preventing feed issues.

Adaptation – Adaptable to most wire feeders.

Water-Cooled – The full water-cooled design allows for complete power cable and neck cooling in high heat applications.

Hybrid Water-Cooled – A hybrid design utilizes an air-cooled power cable with a water-cooled neck providing a low maintenance application.

Customs – Special designs and custom configurations and lengths are readily available.

Location – Manufactured in Sharon Center, Ohio for quality you can trust.

TORCH SPECIFICATIONS

MODEL	AMPERAGE	100% CYCLE DUTY		60% CYCLE DUTY	
		CO2	Mixed Gas (AR/CO2)	CO2	Mixed Gas (AR/CO2)
550A	550A	550A	450A	625A	550A
600A	600A	600A	500A	650A	600A

Duty Cycle is based on a complete cycle time of 10 minutes. (60% Duty Cycle = 6 minutes weld time, 4 minutes off time).

INSTALLATION

Depending on how it is ordered, your AMERICAN WELDQUIP torch has been supplied with either a EURO type feeder connection or a DIRECT wire feeder connection. The AMERICAN WELDQUIP torch can be installed to the wire feed unit in two ways.

- Euro Connection (Feeder Adaptor Kit may be required)
- Direct Connection

EURO CONNECTION (USING FEEDER ADAPTOR KIT)

In some cases, it may be desirable to use a Euro feeder adaptor kit when using different manufactures wire feed units. This will commonize torches to a Euro style configuration.

1) Thread feeder adaptor plug into the adaptor block and tighten.
2) Insert the adaptor guide tube into the adaptor plug.
3) Fully insert the feeder adaptor assembly into the wire feeder. Tighten screw or other method on wire feeder to secure the adaptor assembly.
4) Connect the Euro torch to the feeder adaptor assembly.
5) Feed welding wire into the torch and tighten drive rolls.

WARNING: WHEN FEEDING WELD WIRE THROUGH THE TORCH, KEEP THE FRONT END OF THE TORCH POINTED AWAY FROM ANY PERSON OR OBJECT. DO NOT POINT AT FACE, HANDS ETC. FAILURE TO DO SO WILL RESULT IN BODILY INJURY AND POSSIBLY DEATH.

DIRECT CONNECT

The direct connect torch system is designed for installation to the wire feeder without the need for any adaptor system. The torch is supplied (depending on the torch configuration ordered) with a feeder connection plug at the rear of the torch, gas connection, and feeder control cable.

1) Fully insert the torch Direct Connection into wire feeder. Tighten screw or other method on wire feeder to secure torch.
2) Connect the gas hose if required:
    a. Lincoln Universal – connect PtoC to feeder pin then hose from PtoC to feeder.
    b. OTC/Daihen, Lincoln, and Panasonic – connect to feeder with attached hose.
3) Connect the power cable if required (Lincoln, NA5, and OTC/Daihen feeder pins).
4) Feed welding wire into the torch and tighten drive

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TORCH MOUNT INSTALLATION

Mounting of Automatic torches are done per customer. Mounting fixtures not supplied by AMERICAN WELDQUIP.

DAILY MAINTENANCE

A few minutes per day performing a quick check of your MIG torch will help to decrease weld problems, minimize downtime, and help increase consumable life.

- **At Beginning of Shift**
  - Inspect the cable for cuts, nicks, or tears. If you can see bare copper, return for maintenance.
    - For 600A, check outer cover for cuts, nicks, holes, or tears. If you can see internal components through the outer cover, return for maintenance.
  - Inspect the front-end consumables. Clean weld spatter and inspect the nozzle insulator. If nozzle insulation is damaged it should be replaced.
  - Check that the gas diffuser is tight, and the insulating washer is on the gooseneck.
    - The insulating washer is pertinent to have in place as this helps prevent the gooseneck from getting electrically charged.
  - Check the gas holes on the diffuser and clean if necessary.
  - Check and tighten the contact tip.
  - Check all electrical connections including the power cable from the power supply, torch/feeder connections, and control cables for loose connections. Tighten if necessary. Loose connections can cause overheating of cables and/or loss of electrical power.

MAINTENANCE

LINER REPLACEMENT

Warnings – To avoid accidental injury ensure power supply and wire feed unit is turned off.

1) Trim the end of the weld wire at contact tip.
2) Retract or completely remove weld wire
3) Remove torch from the wire feeder.
4) Remove the nozzle, contact tip, and diffuser. Inspect and replace if necessary.
   a. Inspect insulating washer (between diffuser and gooseneck) and replace if necessary.
5) Loosen the set screw, DO NOT REMOVE, at the torch feeder pin connection using a 5/64” Allen wrench. If retaining nut, remove and set aside.
6) Making sure the torch cable is straight, grasp the liner at the rear of the torch with a pair of pliers and remove.
7) Carefully feed the new liner into the torch using short strokes to avoid kinking. You may need to twist the liner for easier insertion.
8) Tighten the set screw or retaining nut to secure the liner in the torch.
9) Slide the Liner Gauge (P/N 75067219), if present, over the end of the liner and against the gooseneck.
10) Reinstall the torch to the wire feed unit.

11) **IMPORTANT: at the front end of the torch push the liner back into the gun and hold to trim.**

12) While holding the liner in, trim the liner at the top of the Liner Gauge, or of not present, cut the Liner so that 11/16" (4033 series diffusers) sticks out from the end of the gooseneck. Check the torch diffuser to determine if AW 04033 is engraved on it.
13) Replace the diffuser, contact tip and nozzle.
14) Feed welding wire into the torch and tighten drive rolls.

WARNING: WHEN FEEDING WELD WIRE THROUGH THE TORCH KEEP THE FRONT END OF THE TORCH POINTED AWAY FROM ANY PERSON OR OBJECT. DO NOT POINT AT FACE, HANDS ETC. FAILURE TO DO SO WILL RESULT IN BODILY INJURY AND POSSIBLY DEATH.

HYBRID GOOSENECK REPLACEMENT

1) Purge water from lines and disconnect the water lines from the circulator.
2) Secure gooseneck in a vice.
3) Remove the liner from the torch, see liner replacement.
4) Remove the adaptor support screw and slide back on the power cable.
5) Cut off the (2) 8.7mm clamps from the water line at neck. You may have to slit water line with knife to remove from barbed fitting.
6) Using a 5/8" wrench loosen the gooseneck/power cable connection and remove from the power cable assembly.
7) Thread the new gooseneck onto the power cable assembly and tighten with 5/8" wrench.
8) Trim hose behind slit and slide on (2) new 8.7mm clamp on each hose.
9) Push water line onto barbed fitting and secure with clamps.
10) Slide the adaptor support up and onto the mounting piece. Install the adaptor support screw.
11) Reinstall the liner, see liner replacement.
12) Reinstall the diffuser, contact tip and nozzle.

WATER-COOLED GOOSENECK REPLACEMENT

1) Purge water from lines and disconnect the water lines from the circulator.
2) Secure Gooseneck in a vice.
3) Remove the liner from the torch, see liner replacement.
4) Remove the adaptor support screw and slide the adaptor support back on the power cable.
5) Hold the nut at the power cable with an 10mm wrench and unthread the gooseneck using a 11mm wrench.
6) Cut off the (2) 8.7mm clamps from the water line and (1) 7/16" clamp from the gas conduit and pull off neck assembly. You may have to slit water line with knife to remove from barbed fitting.
7) Slide (2) new 8.7mm clamps on the water line and (1) 7/16" clamp on the gas conduit of the cable assembly.
8) Thread the power cable onto the gooseneck and tighten (11mm on gooseneck and 10mm on power cable).

9) Push the water line onto copper barb and conduit onto brass barb on the gooseneck assembly and crimp the (2) 8.7mm and (1) 7/16" clamps.
10) Slide the cable support up and secure with screw on neck.
11) Reinstall the liner, see liner replacement.
12) Reinstall the diffuser, contact tip and nozzle.

HYBRID AIR-COOLED POWER CABLE REPLACEMENT

1) Purge water from water lines of the torch then disconnect the water lines from the cooler and cap the ends.
2) Secure Gooseneck in a vice.
3) Remove the liner from the torch, see liner replacement.
4) Unscrew the spring from the adaptor support and slide back onto power cable.
5) Remove the adaptor support screw and slide the adaptor support back on the cable.
6) Using a 5/8" wrench, loosen the gooseneck/power cable connection and remove gooseneck from the power cable assembly.
7) Remove the adaptor support and spring from old power cable and place on the new power cable assembly.
8) Thread the gooseneck on to the new power cable assembly and tighten.
9) Slide the power cable support up and secure with screw on neck.
10) On the rear of the old power cable assembly, unscrew and slide the spring back on the power cable.
11) Remove the screw securing the adaptor to the feeder pin adaptor block and slide the adaptor support back on to the power cable.
12) Unthread the power cable from the feeder adaptor block.
13) Slide the rear spring and adaptor support onto the new power cable assembly.
14) Thread the feeder adaptor onto the new power cable and tighten.
15) Slide the cable support up and secure with screw on the feeder adaptor.
16) Install the screw on the rear adaptor and feeder adaptor assembly.
    a. Install the other handle half if required.
17) Screw the rear spring onto the adaptor assembly.
18) Reinstall the liner, see liner replacement.
19) Reinstall the diffuser, contact tip and nozzle.

WATER COOLED ASSEMBLY REPLACEMENT

****WARNING: This replacement is a labor-intensive process. Torch assembly can be sent into the manufacture to be evaluated for replacement parts.****

1. Purge water from water lines of the torch then disconnect the water lines from the cooler and cap the ends.
2. Secure Gooseneck in a vice.
3. Remove the liner from the torch, see liner replacement.
4. On the front adaptor unscrew the spring from the front adaptor. A screwdriver may be used to push/twist the spring to unthread it from the front adaptor. The front adaptor will come apart in 2 pieces. Slide the spring down the cable assembly. Remove the front adaptor support screw and slide down the cable assembly.

5. On the rear adaptor support unscrew the spring from the rear adaptor. A screwdriver may be used to push/twist the spring to unthread it from the rear adaptor. The rear adaptor will come apart in 2 pieces. Slide the spring down the cable assembly. Remove the rear adaptor support screw and slide down the cable assembly.
6. At the rear adaptor block, hold the nut on the power cable with a 12mm wrench and unthread the rear adaptor block nut using a 12mm wrench.
7. Cut off the clamp from the gas conduit and remove the gas conduit from the rear adaptor block.
8. Set the rear adaptor and rear adaptor block components aside and save.
9. Slide the outer cover and front & rear springs from around the cable assembly. Set the springs aside for reuse.

Power Cable Replacement (if necessary)

a. At the gooseneck, hold the nut on the power cable with a 10mm wrench and unthread the gooseneck nut using an 11mm wrench.
b. Replace the power cable with a new power cable and attach to the gooseneck with a 10mm wrench on the power cable and an 11mm wrench on the gooseneck nut and tighten.

Gas Conduit Replacement (if necessary)

a. At the gooseneck, cut off the clamp and remove from the brass fitting.
b. Replace gas conduit with a new gas conduit and attach to the brass fitting with a 7/16" clamp.

Blue Water Line Replacement (if necessary)

a. At the gooseneck, cut off both clamps and remove from the copper fitting. The blue water line may have to be cut off the fitting with a knife.
b. At the rear of the blue water line, cut off the clamps and remove from the brass fitting (connects to the chiller). Keep this fitting to reuse on the new water line. The blue water line may have to be cut off the fitting with a knife.
c. Replace the blue water line with a new blue water line and attach to the copper fitting with (2) 8.7mm clamps and the rear quick disconnect brass fitting with (1) 8.7mm clamps.

Outer Cover Replacement (if necessary)

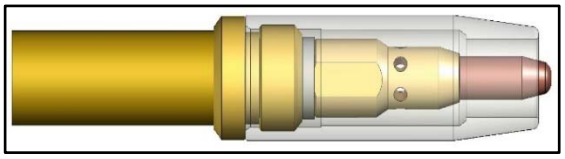
a. Remove the plastic boots (1 on each end) from the old outer cover with a screwdriver as they can be reused.
b. Place a plastic boot on each end of the new outer cover. Secure each with super glue to the inside of the new outer cover.

10. Slide the outer cover over the power cable, gas conduit and water line.
11. Slide the front adaptor assembly back over the rear of the gooseneck and secure with the front adaptor screw. Set the outer cover boot inside the front adaptor assembly and slide the 2nd part of the front adaptor into the first. Slide the spring up the outer cover and thread onto the 2-piece front adaptor assembly securing in place.
12. Slide the second spring onto the rear of the outer cover, small end toward the front.
13. Slide the rear adaptor over the power cable, gas conduit and water line.
14. Attach the power cable to the rear adaptor block by holding the nut on the power cable with an 12mm wrench and thread the rear adaptor block nut using a 12mm wrench.
15. Attach the gas conduit to the rear adaptor block on the brass fitting with a 7/16" clamp.

16. Slide the rear adaptor onto the rear adaptor block and attach with the rear adaptor screw. Set the outer cover boot inside the rear adaptor assembly and slide the 2nd part of the rear adaptor into the first. The red and blue water lines should come out the notch in the side. Be sure not to pinch the red and blue water lines. Slide the spring down the outer cover and thread onto the 2-piece rear adaptor assembly securing in place.
17. Reinstall the liner, see liner replacement.
18. Reinstall the diffuser, contact tip and nozzle.

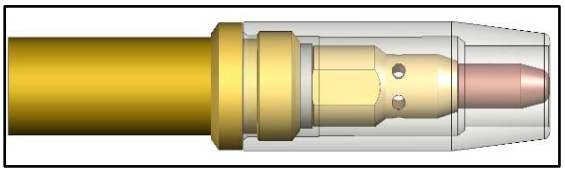
NOZZLE/TIP RELATIONSHIPS

Shown below are typical relationship between the contact tip and nozzle in GMAW Semi-Automatic applications. Nozzles to tip relationships are usually dictated by the process and application but not necessarily the standard. Keep in mind that decreased tip life, increased spatter cleaning cycles may be required if the tip relationship is changed to achieve other objectives.



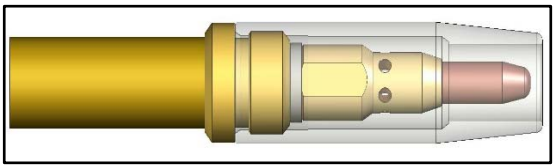
Extended Tip – Short Circuit (Short Arc, Dip Transfer) Welding Applications

The tip stick out is usually 1/8" or 1/4" from the nozzle. Keep in mind that the further the stick out the more susceptible to gas porosity issues. Typically, is used in short circuit, lower amperage applications, and/or where you may need to reach into a corner.



Flush Tip – Higher current Short Circuit (Short Arc, Dip Transfer) Welding Applications

The tip is flush with the end of the nozzle. Typically used in higher current and voltage short circuit applications.



Recessed Tip – Spray Arc, Pulsed, Flux Core Welding Applications

The tip is usually recessed in the nozzle 1/8" or 1/4". Usually, the higher the heat and/or current the further the recess. However, this is also dependent on the wire used and the arc length requirement.

NOZZLE SELECTION CHART

400 SERIES NOZZLES

Part Number	Description	Bore Size	Material	O.A.L	Insulator
75144301-I	TAPERED	7/16" (11.1mm)	NI PLATED BRASS	2.820" (71.6mm)	INSTALLED
75144302-I	TAPERED	7/16" (11.1mm)	NI PLATED BRASS	3.125" (79.4mm)	INSTALLED
75145001	BOTTLE NOSE	1/2" (12.7mm)	NI PLATED BRASS	3.031" (77.0mm)	75001733
75145002C	TAPERED	1/2" (12.7mm)	NI BARE COPPER	3.125" (79.4mm)	75001738
75145002CU	TAPERED	1/2" (12.7mm)	BARE COPPER	3.125" (79.4mm)	75001738
75145003	LONG TAPERED	1/2" (12.7mm)	NI PLATED BRASS	3.915" (99.4mm)	NONE REQ
75145004	BOTTLE NOSE	1/2" (12.7mm)	NI PLATED BRASS	3.125" (79.4mm)	75001733
75145005	BOTTLE NOSE	1/2" (12.7mm)	NI PLATED BRASS	2.820" (71.6mm)	75001733
75145601-I	TAPERED	9/16" (14.2mm)	NI PLATED BRASS	3.125" (79.4mm)	INSTALLED
75145602-I	SMALL CONICAL	9/16" (14.2mm)	NI PLATED BRASS	2.820" (71.6mm)	INSTALLED
75145603-I	SHORT TAPERED	9/16" (14.2mm)	NI PLATED BRASS	2.375" (60.3mm)	INSTALLED
75146202	CONICAL	5/8" (15.9mm)	NI PLATED BRASS	3.125" (79.4mm)	75001738
75146202C	CONICAL	5/8" (15.9mm)	NI PLATED COPPER	3.125" (79.4mm)	75001738
75146202CU	CONICAL	5/8" (15.9mm)	BARE COPPER	3.125" (79.4mm)	75001738
75146202-I	BOTTLE NOSE	5/8" (15.9mm)	NI PLATED BRASS	3.125" (79.4mm)	INSTALLED
75146204CU	CONICAL	5/8" (15.9mm)	BARE COPPER	2.820" (71.6mm)	75001738
75146204-I	CONICAL	5/8" (15.9mm)	NI PLATED BRASS	2.820" (71.6mm)	INSTALLED
75146205CU	TAPERED	5/8" (15.9mm)	BARE COPPER	3.031" (77.0mm)	75001738
75146205-I	CONICAL	5/8" (15.9mm)	NI PLATED BRASS	3.031" (77.0mm)	INSTALLED
75146206-I	SHORT CONICAL	5/8" (15.9mm)	NI PLATED BRASS	1.875" (47.6mm)	INSTALLED
75146207-I	SHORT CONICAL	5/8" (15.9mm)	NI PLATED BRASS	2.187" (55.6mm)	INSTALLED
75146501S	SPOT	5/8" (15.9mm)	NI PLATED BRASS	3.437" (87.3mm)	75001738
75147501	CYLINDRICAL	3/4" (19.0mm)	NI PLATED BRASS	3.125" (79.4mm)	75001738
75147501CU	CYLINDRICAL	3/4" (19.0mm)	BARE COPPER	3.125" (79.4mm)	75001738

CONTACT TIP SELECTION CHART

M8 CONTACT TIPS

Part Number	Wire Size	Nominal I.D
Copper (CU)		
75030014	0.030" (.8mm)	0.038"
75035014	0.035" (.9mm)	0.044"
75040014	0.040" (1.0mm)	0.048"
75045014	0.045" (1.2mm)	0.054"
75047014 (FOR ALUMINUM)	0.045" (1.2mm)	0.057"
75052014	0.052" (1.3mm)	0.061"
75062014	0.062" (1.6mm)	0.073"
75062015 (FOR ALUMINUM)	0.062" (1.6mm)	0.076"
75078014	0.078" (2.0mm)	0.087"
75093014	0.093" (2.4mm)	0.106"
Heat Resistant Technology (HRT) – Standard Length		
20030400	0.030" (.8mm)	0.039"

20035400	0.035” (.9mm)	0.041”
20040400	0.040” (1.0mm)	0.050”
20045400	0.045” (1.2mm)	0.054”
20052400TT	0.052” (1.3mm	0.057”
20062400	0.062” (1.6mm	0.069”
Heat Resistant Technology (HRT) – Short Length		
20030500	0.030” (.8mm)	0.039”
20035500	0.035” (.9mm)	0.041”
20040500	0.040” (1.0mm)	0.050”
20045500	0.045” (1.2mm)	0.054”
20052500	0.052” (1.3mm)	0.061”
20062500	0.062” (1.6mm)	0.069”

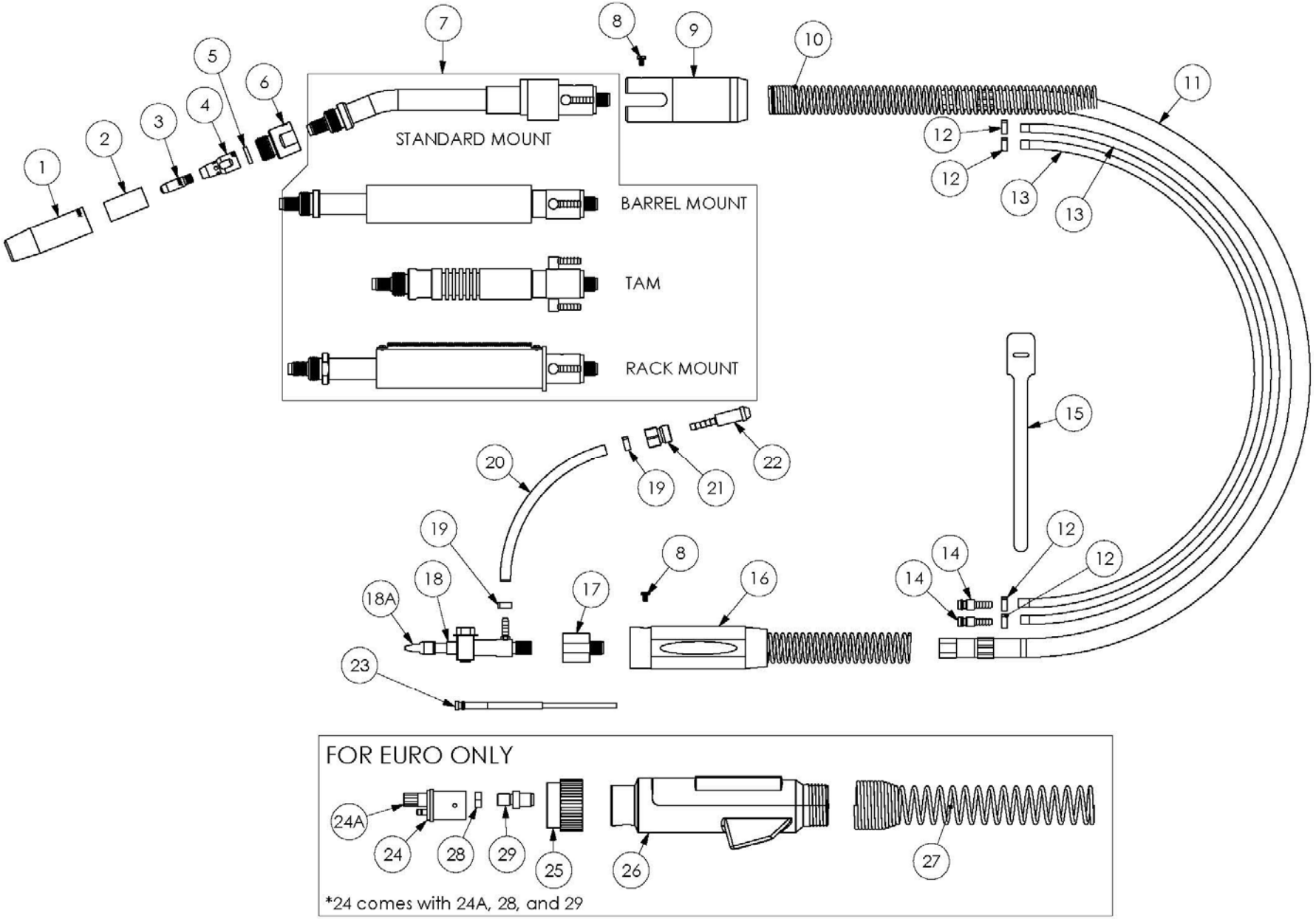
*TT is for tight tolerance.

LINER SELECTION CHART

(ALL SERIES AND FEEDER PINS)

Part Number	Description
For Steel Wire Applications	
75005215T	0.023-0.030 STEEL LINER, 5FT
75010215T	0.023-0.030 STEEL LINER, 10FT
75015215T	0.023-0.030 STEEL LINER, 15FT
75001222T	0.035-0.045 STEEL LINER, 1FT
75005222T	0.035-0.045 STEEL LINER, 5FT
75010222T	0.035-0.045 STEEL LINER, 10FT
75015222T	0.035-0.045 STEEL LINER, 15FT
75025222T	0.035-0.045 STEEL LINER, 25FT
75001228T	0.045-1/16 STEEL LINER, 1FT
75005228T	0.045-1/16 STEEL LINER, 5FT
75010228T	0.045-1/16 STEEL LINER, 10FT
75015228T	0.045-1/16 STEEL LINER, 15FT
75025228T	0.045-1/16 STEEL LINER, 25FT
75001229T	5/64-3/32 STEEL LINER, 1FT
75005229T	5/64-3/32 STEEL LINER, 5FT
75010229T	5/64-3/32 STEEL LINER, 10FT
75015229T	5/64-3/32 STEEL LINER, 15FT
75025229T	5/64-3/32 STEEL LINER, 25FT
For Aluminum Wire Applications	
75005320T-J	0.035-0.045 TEFLON LINER, 5FT
75010320T-J	0.035-0.045 TEFLON LINER, 10FT
75005324T-J	0.045-1/16 NYLON LINER, 5FT
75010324T-J	0.045-1/16 NYLON LINER, 10FT
75015324T-J	0.045-1/16 NYLON LINER, 15FT

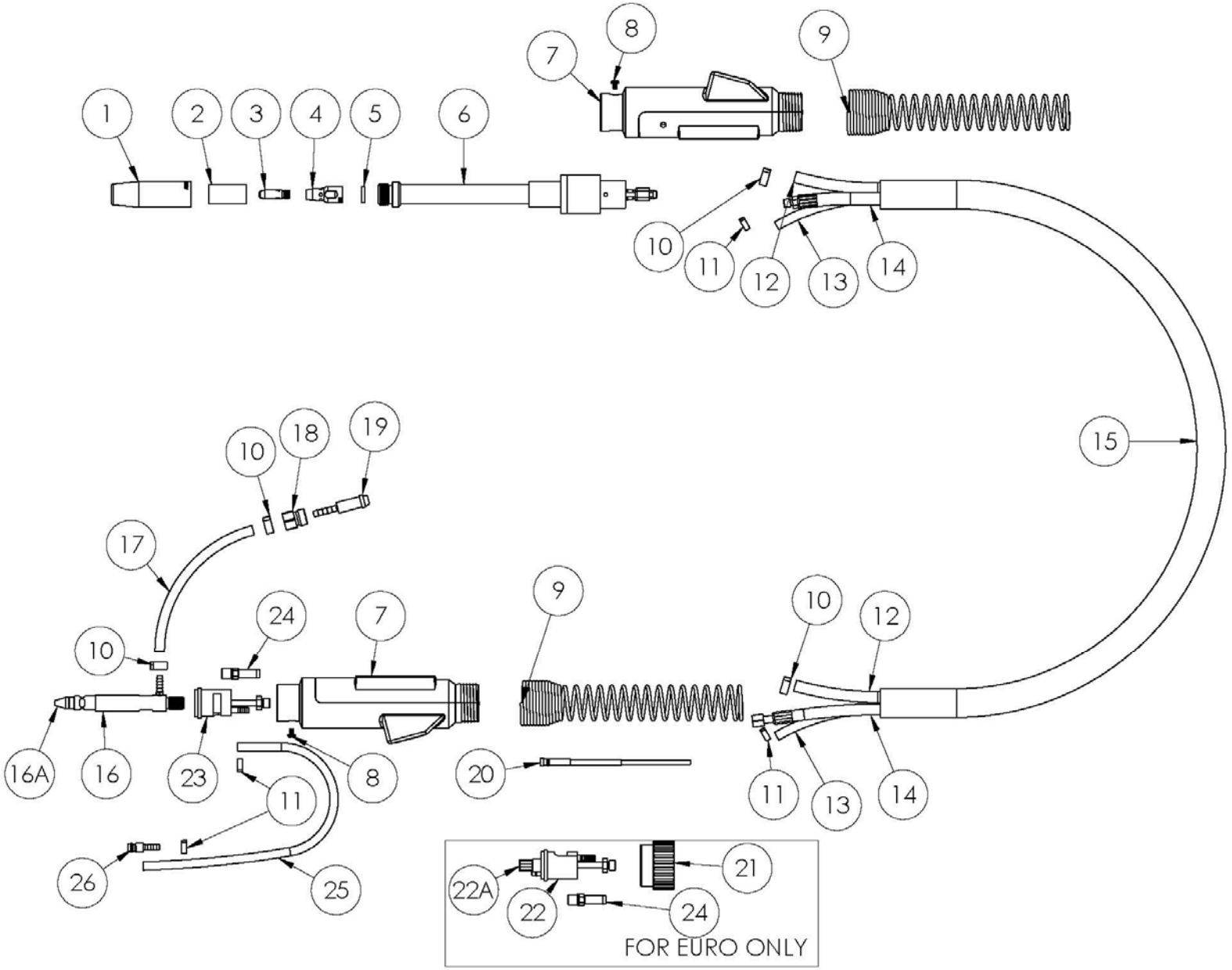
PARTS BREAKDOWN - 550A



NO.	DESCRIPTION	550A	NO.	DESCRIPTION	550A
1	NOZZLE	SEE NOZZLE CHART	NS	5/8-18 LH NUT (WATER)	38677143
2	NOZZLE INSULATOR	SEE NOZZLE CHART	NS	2-7/32" NIPPLE (TYPE A)	38677142
3	CONTACT TIP	SEE TIP CHART	15	VELCRO STRAP	75099698
4	GAS DIFFUSER, STANDARD	75004033	16	REAR ADAPTOR SUPPORT W/ SPRING	75077004
	GAS DIFFUSER, SHORT	75004033S	17	DIRECT CONNECT BLOCK	37077003
	GAS DIFFUSER, LONG	75004033L	18	FRONIUS (FSC) FEEDER PIN (INCLUDES #17)	37677711 *SEE APPENDIX A-3*
	GAS DIFFUSER, X-LONG	75004033XL		LINCOLN LN7 FEEDER PIN	37577832
	INSULATING WASHER	75001004		LINCOLN UNIVERSAL	37577837
6	REPLACEABLE NOZZLE SEAT – OPTIONAL*	75077347		MILLER FEEDER PIN	37577705
		75077357		OTC / DAIHEN FEEDER PIN	37577700
		75077850		OTC DP SERIES FEEDER PIN	37577701
7	GOOSENECK 180°	550A-180-H		PANASONIC FEEDER PIN	37577999
	GOOSENECK 45°	550A-45-H		TWECO #4 FEEDER PIN	37577699
	GOOSENECK 22°	550A-22-H		TWECO #5 FEEDER PIN	37577930
	GOOSENECK 180° BARREL MOUNT	550A-180BM-H	18A	LINER CAP - FRONIUS (FSC)	*SEE APPENDIX-A-3*
	GOOSENECK 45° BARREL MOUNT	550A-45BM-H		LINER CAP - MILLER	37577705-N
	GOOSENECK 180° RACK MOUNT	550A-180RM-H		LINER CAP - OTC	38277001-N078
	GOOSENECK 45° RACK MOUNT	550A-45RM-H	NS	O-RING - EURO	28500002
	TAM – SHORT (6")	550A-TS-H	NS	O-RING - FRONIUS (FSC)	75000057
	TAM – STANDARD (8.75")	550A-T-H	NS	O-RING - MILLER	37577102
	TAM – LONG (12")	550A-TL-H	NS	O-RING - TWECO #4	37677102
NS	6" RACK FOR RACK MOUNT	RACK6	NS	O-RING - TWECO #5	75000021
NS	12" RACK FOR RACK MOUNT	RACK12	19	7/16" GAS HOSE CLAMP	38577108
8	SUPPORT SCREW	75077011	20	GAS HOSE (PER FOOT)	38577087
9	FRONT HANDLE SUPPORT	75077017W	21	5/8-18 RH NUT (GAS TYPE A)	38677141
10	CABLE SUPPORT SPRING	75002009	NS	9/16-18 RH NUT (GAS TYPE B)	38677145
11	3FT POWER CABLE	75003500R	22	2-7/32" NIPPLE (GAS TYPE A)	38677142
	4FT POWER CABLE	75004500R	NS	9/16" NIPPLE (GAS TYPE B)	38677144
	5FT POWER CABLE	75005500R	23	LINER	SEE LINER CHART
	6FT POWER CABLE	75006500R	24	EURO ADAPTOR BLOCK	75001147
	8FT POWER CABLE	75008500R	24A	LINER CAP - EURO	37077005
	10FT POWER CABLE	75010500R	25	EURO FEEDER NUT	75077014
12	8.7MM WATER HOSE CLAMP	38577105	26	REAR ADAPTOR SUPPORT	75077006
13	BLUE WATER HOSE (PER FOOT)	75099025	27	ADAPTOR SUPPORT SPRING	75002018
NS	RED WATER HOSE (PER FOOT)	75099026	28	EURO LOCK NUT	75001029
14	MALE QUICK DISCONNECTS	38660000	29	EURO TO POWER CABLE ADAPTOR	75001151

- Replaceable Nozzle Seats either have the last 3 numbers etched on them or select part number by the largest diameter on the Replaceable Nozzle Seat **(347= Ø 0.980", 357= Ø 1.125", 850= Ø 1.110").** Can't add Replaceable Nozzle Seat to a Gooseneck that doesn't already have a Replaceable Nozzle Seat.
- Type A = Lincoln
- Type B = OTC / Panasonic

PARTS BREAKDOWN - 600A



NO	DESCRIPTION	600A	NO	DESCRIPTION	600A
1	NOZZLE	SEE NOZZLE CHART		LINCOLN UNIVERSAL	37577837
2	NOZZLE INSULATOR	SEE NOZZLE CHART		MILLER FEEDER PIN	37577705
3	CONTACT TIP	SEE TIP CHART		OTC / DAIHEN FEEDER PIN	37577700
4	GAS DIFFUSER, STANDARD	75004033		OTC DP SERIES FEEDER PIN	37577701
	GAS DIFFUSER, SHORT	75004033S		PANASONIC FEEDER PIN	37577999
	GAS DIFFUSER, LONG	75004033L		TWECO #4 FEEDER PIN	37577699
	GAS DIFFUSER, X-LONG	75004033XL		TWECO #5 FEEDER PIN	37577930
5	INSULATING WASHER	75001004	16A	LINER CAP - FRONIUS (FSC)	*SEE APPENDIX A-3*
NS	REPLACEABLE NOZZLE SEAT – OPTIONAL*	75077347		LINER CAP - MILLER	37577705-N
		75077357		LINER CAP - OTC	38277001-N078
		75077850	NS	O-RING - EURO	28500002
6	GOOSENECK 180°	600A-180-H	NS	O-RING - FRONIUS (FSC)	75000057
	GOOSENECK 22°	600A-22-H	NS	O-RING - MILLER PIN	37577102
	GOOSENECK 45°	600A-45-H	NS	O-RING - TWECO #4 PIN	37677102
7	ADAPTOR SUPPORT	75077006	NS	O-RING - TWECO #5 PIN	75000021
8	SUPPORT SCREW	75077011	17	GAS HOSE (PER FOOT)	38577087
9	CABLE SUPPORT SPRING	75002018	18	5/8-18 RH NUT (GAS TYPE A)	38677141
10	7/16" GAS HOSE CLAMP	385771108	NS	9/16-18 RH NUT (GAS TYPE B)	38677145
11	8.7MM WATER HOSE CLAMP	38577105	19	2-7/32” NIPPLE (GAS TYPE A)	38677142
12	GAS CONDUIT (PER FOOT)	75099600	NS	9/16” NIPPLE (GAS TYPE B)	38677144
13	BLUE WATER HOSE (PER FOOT)	75099025	20	LINER	SEE LINER CHART
14	W/C POWER CABLE - 3FT	75006003	21	EURO FEEDER NUT	75077014
	W/C POWER CABLE - 4FT	75006004	22	EURO ADAPTOR BLOCK	75001146
	W/C POWER CABLE - 5FT	75006005	22A	LINER CAP – EURO	37077005
	W/C POWER CABLE - 6FT	75006006	23	W/C FEEDER PIN BLOCK	75006148-DC
	W/C POWER CABLE - 8FT	75006008	24	GAS CONDUIT FITTING	75077021
	W/C POWER CABLE - 10FT	75006010	25	RED WATER HOSE (PER FOOT)	75099026
15	CABLE COVER (PER FOOT)	32160999	26	MALE QUICK DISCONNECT	38660000
16	FRONIUS (FSC) FEEDER PIN (INCLUDES #23)	37677711WC *SEE APPENDIX A-3*	NS	5/8-18 LH NUT (WATER)	38677143
	LINCOLN LN7 FEEDER PIN	37577832	NS	2-7/32” NIPPLE (TYPE A)	38677142

- Replaceable Nozzle Seats either have the last 3 numbers etched on them or select part number by the largest diameter on the Replaceable Nozzle Seat **(347= Ø 0.980”, 357= Ø 1.125”, 850= Ø 1.110”)**. Can’t add Replaceable Nozzle Seat to a Gooseneck that doesn’t already have a Replaceable Nozzle Seat.
- Type A = Lincoln
- Type B = OTC / Panasonic

APPENDIX

A-1 450A TORCHES

(Our 450A series was replaced by the 550A. Consumables, water lines, feeder pins, etc. are interchangeable between the two systems.)

NO	DESCRIPTION	450A	NO	DESCRIPTION	450A
1	NOZZLE	SEE NOZZLE CHART	NS	5/8-18 LH NUT (WATER)	38677143
2	NOZZLE INSULATOR	SEE NOZZLE CHART	NS	2-7/32" NIPPLE (TYPE A)	38677142
3	CONTACT TIP	SEE TIP CHART	15	VELCRO STRAP	75099698
4	GAS DIFFUSER, STANDARD	75004033	16	REAR ADAPTOR SUPPORT W/ SPRING	75077004
	GAS DIFFUSER, SHORT	75004033S	17	DIRECT CONNECT BLOCK	37077003
	GAS DIFFUSER, LONG	75004033L	18	FRONIUS (FSC) FEEDER PIN (INCLUDES #17)	37677711 *SEE APPENDIX A-3*
	GAS DIFFUSER, X-LONG	75004033XL		LINCOLN LN7 FEEDER PIN	37577832
5	INSULATING WASHER	75001004		LINCOLN UNIVERSAL	37577837
6	REPLACEABLE NOZZLE SEAT – OPTIONAL*	75077347		MILLER FEEDER PIN	37577705
		75077357		OTC / DAIHEN FEEDER PIN	37577700
		75077850		OTC DP SERIES FEEDER PIN	37577701
7	GOOSENECK 180°	450A-180-H		PANASONIC FEEDER PIN	37577999
	GOOSENECK 45°	450A-45-H		TWECO #4 FEEDER PIN	37577699
	GOOSENECK 22°	450A-22-H		TWECO #5 FEEDER PIN	37577930
	GOOSENECK 180° BARREL MOUNT	450A-180BM-H	18A	LINER CAP - FRONIUS (FSC)	*SEE APPENDIX A-3*
	GOOSENECK 45° BARREL MOUNT	450A-45BM-H		LINER CAP - MILLER	37577705-N
	GOOSENECK 180° RACK MOUNT	450A-180RM-H		LINER CAP - OTC	38277001-N078B
	GOOSENECK 45° RACK MOUNT	450A-45RM-H	NS	O-RING - EURO	28500002
	TAM – SHORT (6")	450A-TS-H	NS	O-RING – FRONIUS (FSC)	75000057
	TAM – STANDARD (8.75")	450A-T-H	NS	O-RING - MILLER PIN	37577102
	TAM – LONG (12")	450A-TL-H	NS	O-RING - TWECO #4 PIN	37677102
NS	6" RACK FOR RACK MOUNT	RACK6	NS	O-RING - TWECO #5 PIN	75000021
NS	12" RACK FOR RACK MOUNT	RACK12	19	7/16" GAS HOSE CLAMP	38577108
8	SUPPORT SCREW	75077011	20	GAS HOSE (PER FOOT)	38577087
9	FRONT HANDLE SUPPORT	75077017W	21	5/8-18 RH NUT (GAS TYPE A)	38677141
10	CABLE SUPPORT SPRING	75002009	NS	9/16-18 RH NUT (GAS TYPE B)	38677145
11	3FT POWER CABLE	75003400R	22	2-7/32" NIPPLE (GAS TYPE A)	38677142
	4FT POWER CABLE	75004400R	NS	9/16" NIPPLE (GAS TYPE B)	38677144
	5FT POWER CABLE	75005400R	23	LINER	SEE LINER CHART
	6FT POWER CABLE	75006400R	24	EURO ADAPTOR BLOCK	75001147
	8FT POWER CABLE	75008400R	24A	LINER CAP - EURO	37077005
	10FT POWER CABLE	75010400R	25	EURO FEEDER NUT	75077014
12	8.7MM WATER HOSE CLAMP	38577105	26	REAR ADAPTOR SUPPORT	75077006
13	BLUE WATER HOSE (PER FOOT)	75099025	27	ADAPTOR SUPPORT SPRING	75002018
NS	RED WATER HOSE (PER FOOT)	75099026	28	EURO LOCK NUT	75001029
14	MALE QUICK DISCONNECTS	38660000	29	EURO TO POWER CABLE ADAPTOR	75001151

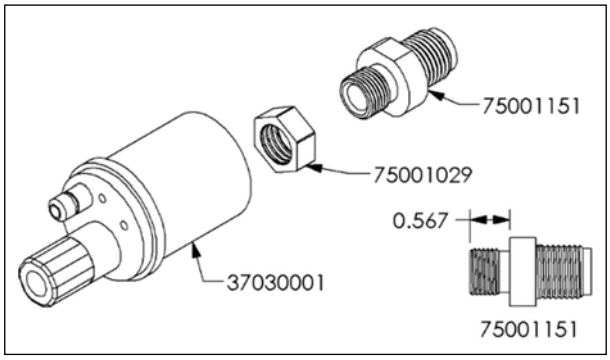
- Replaceable Nozzle Seats either have the last 3 numbers etched on them or select part number by the largest diameter on the Replaceable Nozzle Seat **(347= Ø 0.980", 357= Ø 1.125", 850= Ø 1.110").** Can't add Replaceable Nozzle Seat to a Gooseneck that doesn't already have a Replaceable Nozzle Seat.
- Type A = Lincoln
- Type B = OTC / Panasonic

Torch Specifications

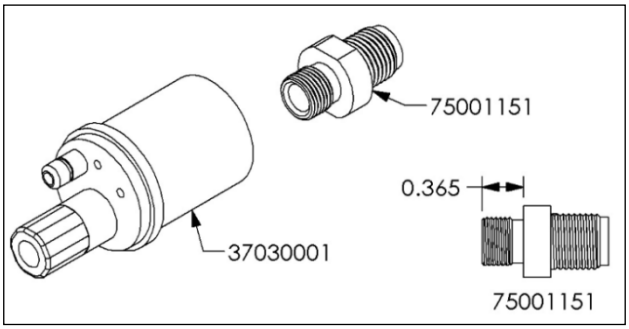
Model	Amperage	100% Duty Cycle		60% Duty Cycle	
		CO2	Mixed Gas	CO2	Mixed Gas
450A	450	450A	425A	500A	450A

A-2 EURO FEEDER PIN

Before January 2024
No longer Available



January 2024 and after
P/N 75001147



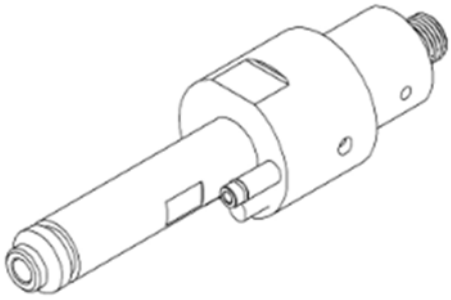
If 75001151 length is 0.567” long, P/N 75001029 is still needed and is still available.

37030001 will come with pins and wires used in hand-held applications. Not used in this application.

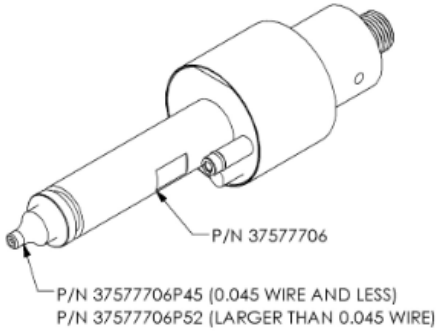
When ordering 75001147, 37030001 will not have pins and wires.

A-3 FRONIUS FSC FEEDER PIN

Before February 2024
No longer Available



February 2025 and after
For Air Cooled Power Cable P/N 37677711
For Water Cooled Power Cable P/N 37677711WC



Switching from old style to new style. A new Pin (P/N 37577706) and Plug (37577706P45 [0.045 wire and smaller] or 37577706P52 [larger than 0.045 wire]) is needed. No need to purchase the entire assembly.

NOTES

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