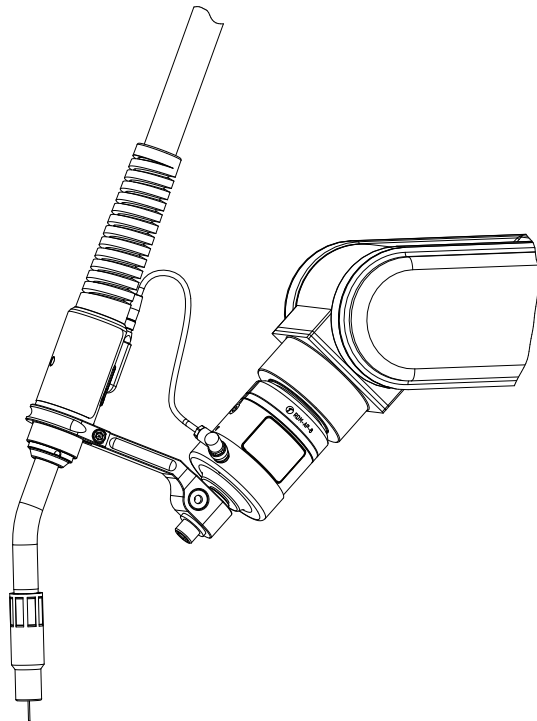


Tweco[®]
Robotics

LIGHT WEIGHT

QUICK ROBOTICS TORCH

English
Français
Español



Installation Guide and Replacement Parts Manual



WE APPRECIATE YOUR BUSINESS!

Congratulations on your new Tweco® Robotics product. We are proud to have you as our customer and will strive to provide you with the best service and reliability in the industry. This product is backed by our extensive warranty and world-wide service network. To locate your nearest distributor or service agency call 800-426-1888, or visit us on the web at www.tweco.com.

This Operating Manual has been designed to instruct you on the correct use and operation of your Tweco® Robotics product. Your satisfaction with this product and its safe operation is our ultimate concern. Therefore, please take the time to read the entire manual, especially the Safety Precautions. They will help you to avoid potential hazards that may exist when working with this product.

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The Brand of Choice for Contractors and Fabricators Worldwide.

Tweco® Robotics is a Global Brand of Arc Welding Products for Thermadyne Industries Inc. We manufacture and supply to major welding industry sectors worldwide including; Manufacturing, Construction, Mining, Automotive, Aerospace, Engineering, Rural and DIY/Hobbyist.

We distinguish ourselves from our competition through market-leading, dependable products that have stood the test of time. We pride ourselves on technical innovation, competitive prices, excellent delivery, superior customer service and technical support, together with excellence in sales and marketing expertise.

Above all, we are committed to develop technologically advanced products to achieve a safer working environment within the welding industry.



Read and understand this entire Manual and your employer's safety practices before installing, operating, or servicing the equipment.

While the information contained in this Manual represents the Manufacturer's best judgment, the Manufacturer assumes no liability for its use.

Light Weight Quick Robotics Torch
Installation Guide and Replacement Parts Manual
Instruction Manual Number SM-QRLTORCH

Published by:
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(940) 566-2000

www.tweco.com

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Publication Date: June 30, 2006

Record the following information for Warranty purposes:

Where Purchased: _____

Purchase Date: _____

Equipment Serial #: _____

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**SECTION 1:
SAFETY INSTRUCTIONS AND WARNINGS**



WARNING

SERIOUS INJURY OR DEATH may result if welding and cutting equipment is not properly installed, used and maintained. Misuse of this equipment and other unsafe practices can be hazardous. The operator, supervisor and helper must read and understand the following safety warnings and instructions before installing or using any welding or cutting equipment.

The welding and cutting process is used in many potentially dangerous environments such as elevated heights, areas of limited ventilation, close quarters, around water, in hostile environments, etc., and it is important that the operator(s) are aware of the dangers associated with working in these types of conditions. Be certain that the operator(s) are trained in safe practices for environments in which they are expected to work and under competent supervision.

It is essential that the operator, supervisor and all other personnel in the work area are aware of the dangers of the welding or cutting process. Training and proper supervision are important for a safe work place. Keep these instructions for future use. Additional recommended safety and operating information is referenced in each section.

1.01 Welding Hazards



WARNING

ELECTRIC SHOCK CAN CAUSE INJURY OR DEATH.

INSTALL AND MAINTAIN EQUIPMENT IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NFPA 70) AND LOCAL CODES. DO NOT SERVICE OR REPAIR EQUIPMENT WITH POWER ON. DO NOT OPERATE EQUIPMENT WITH PROTECTIVE INSULATORS OR COVERS REMOVED. SERVICE OR REPAIR TO EQUIPMENT MUST BE DONE BY A QUALIFIED REPAIR TECHNICIAN, OR TRAINED PERSONNEL ONLY.

1. Do not touch live electrical parts.
2. Do not touch an electrode with bare skin and electrical ground at the same time.
3. Always keep welding gloves dry and in good condition.

NOTE

Aluminized protective clothing can become part of the electrical path.

4. Keep oxygen cylinders, chains, wire ropes, cranes, hoists, and elevators away from any part of the electrical path.

5. All ground connections must be checked periodically to determine that they are mechanically strong and electrically adequate for the required current.
6. When engaged in alternating current, welding, or cutting under wet conditions or warm surroundings where perspiration is a factor, the use of reliable automatic controls for reducing the no-load voltage is recommended to reduce shock hazard.
7. When the welding or cutting process requires values of open circuit voltages in alternating current machines higher than 80 volts, and direct current machines higher than 100 volts, means must be provided to prevent the operator from making accidental contact with the high voltage by adequate insulation or other means.
8. When welding is to be suspended for any substantial length of time, such as during lunch or overnight, all electrodes should be removed from the electrode holder and the electrode holder carefully located so that accidental contact cannot occur.
9. The holder must be disconnected from the power source when not in use.
10. Never immerse Mig-Guns, electrode holders, tig torches, plasma torches, or electrodes in water.



WARNING

SMOKE, FUMES AND GASES CAN BE DANGEROUS TO YOUR HEALTH.

QUICK ROBOTICS LIGHT WEIGHT TORCH

11. Keep smoke, fumes, and gases from the breathing area.
12. Fumes from the welding or cutting process are of various types and strengths, depending on the kind of base metal being worked on. To ensure your safety, do not breathe these fumes.
13. Ventilation must be adequate to remove smoke, fumes, and gases during the operation to protect operators and other personnel in the area.
14. Vapors of chlorinated solvents can form the toxic gas "Phosgene" when exposed to ultraviolet radiation from an electric arc. All solvents, degreasers, and potential sources of these vapors must be removed from the work area.
15. Fumes produced by welding or cutting, particularly in confined places, can cause discomfort and physical harm if inhaled over an extended period of time.
16. Provide adequate ventilation in the welding or cutting area. Use air-supplied respirators if ventilation is not adequate to remove all fumes and gases. **Never ventilate with oxygen.** Oxygen supports and vigorously accelerates fire.



WARNING

ARC RAYS, HOT SLAG AND SPARKS CAN INJURE EYES AND BURN SKIN.

17. The welding and cutting processes produce extreme localized heat, and strong ultraviolet rays.
18. Never attempt to weld or cut without a welding helmet with the proper lens. Ensure that the lens complies with federal guidelines. A number 12 to 14 shade filter lens provides the best protection against arc radiation. When in a confined area, prevent the reflected arc rays from entering around the helmet.
19. Ensure all personnel in the work area are protected from arc rays and sparks. Approved shielding curtains and appropriate goggles should be used to provide protection to staff in the surrounding area and operators of nearby equipment.
20. Unprotected skin should also be covered from arc rays, heat and molten metal. Always wear protective gloves and clothing that does not allow skin to become exposed. All pockets should be closed and cuffs sewn shut. Leather aprons, sleeves, leggings, etc., should be worn for out-of-position welding and cutting or for heavy operations using large electrodes. High top work shoes provide adequate protection from foot burns. For added protection use leather spats.
21. Flammable hair preparations should not be used when welding or cutting. Wear ear plugs to protect ears from sparks.
22. Where the work area permits, the operator should be enclosed in an individual booth painted with a finish of low reflectivity such as zinc oxide. This is an important factor for absorbing ultraviolet radiations, and lamp black. The operator should be enclosed with non-combustible screens similarly painted.



WARNING

WELDING SPARKS CAN CAUSE FIRES AND EXPLOSIONS.

23. Causes of fire and explosion are: combustibles reached by the arc, flame, flying sparks, hot slag, or heated material. Remove combustibles from the work area and/or provide a fire watch.
24. Avoid oily or greasy clothing as sparks may ignite them. Have a fire extinguisher nearby, and know how to use it.
25. Be alert to the danger of conduction or radiation. For example, if welding or cutting is to be done on a metal wall, partition, ceiling, or roof, precautions must be taken to prevent ignition of combustibles on the other side.
26. Do not weld or cut containers that have held combustibles. All hollow spaces, cavities and containers should be vented prior to welding or cutting to permit the escape of air or gases. Purging with inert gas is recommended.
27. **Never use oxygen in a welding torch.** Use only inert gases or inert gas mixes as required by the process. Use of combustible compressed gases can cause explosions resulting in personal injury or death. Arcing against any compressed gas cylinder can cause cylinder damage or explosion.



WARNING

NOISE CAN DAMAGE HEARING.

28. Noise from the air carbon-arc process can damage your hearing. Wear protective hearing devices to ensure protection when noise levels exceed OSHA standards. Adequate hearing protection devices must be worn by operators and surrounding personnel to ensure personal protection against noise.

1.02 Principal Safety Standards

| SAFETY AND OPERATING REFERENCES |
|--|
| 1. Code of Federal Regulations. (OSHA) Section 29 Part 1910.95, 132, 133, 134, 139, 251, 252, 253, 254 and 1000. U.S. Government Printing Office, Washington, DC. 20402. |
| 2. ANSI Z49.1 "Safety in Welding and Cutting". |
| 3. ANSI Z87.1 "Practice for Occupational and Educational Eye and Face Protection". |
| 4. ANSI Z88.2 "Standard Practice for Respiratory Protection". American National Standards Institute, 1430 Broadway, New York, NY. 10018. |
| 5. AWS F4.1 "Recommended Safe Practices for Welding and Cutting Containers". |
| 6. AWS C5.3 "Recommended Practices for Air Carbon-Arc Gouging and Cutting". The American Welding Society, 550 NW Lejeune RD., P.O.Box 351040, Miami FL. 33135. |
| 7. NFPA 51B "Fire Prevention in Cutting and Welding Processes". |
| 8. NFPA-7 "National Electrical Code." National Fire Protection Association, Battery Park, Quincy, MA. 02269. |
| 9. CSA W117.2, "Safety in Welding, Cutting and Allied Processes". Canadian Standards Association, 178 Rexdale Blvd., Rexdale, Ontario, Canada M9W 1R3. |

1.03 Safety and Health

NOTICE

Be sure to read and fully comprehend the safety instructions and warnings contained within section 1 of this manual before performing any welding or cutting operations.



WARNING

Serious injury or death may result if welding and cutting equipment is not properly installed, used and maintained. Misuse of this equipment, or other unsafe practices, can be hazardous.

- Electric shock can cause injury or death.
- Smoke, fumes, and gases can be dangerous to your health.
- Arc rays, hot slag, and sparks can injure or burn unprotected eyes and skin.
- Welding sparks can cause fires and explosions.
- Excessive noise can damage your hearing.

SECTION 2: INTRODUCTION AND DESCRIPTION

2.01 How to Use this Manual

To ensure safe operation, read the entire manual, including the chapters on safety instructions and warnings.

Throughout this manual, the words **WARNING**, **CAUTION**, and **NOTE** may appear. Pay particular attention to the information provided under these headings. These special annotations are easily recognized as follows:



WARNING

A WARNING GIVES INFORMATION REGARDING POSSIBLE PERSONAL INJURY.



CAUTION

A CAUTION refers to possible equipment damage.

NOTE

A NOTE offers helpful information concerning certain operating procedures.

2.02 Receipt of Equipment

When you receive the equipment, check it against the invoice to make sure it is complete and inspect the equipment for possible damage due to shipping. If there is any damage, notify the carrier immediately to file a claim. Furnish complete information concerning damage claims or shipping errors to the location in your area listed in the inside back cover of this manual. Include a full description of the parts in error.

If you want additional or replacement copies of this CD, please contact Tweco® Robotics at the address and phone number in your area listed on the inside back cover of this manual. Include the Manual number (from page i) and CD part number: 64-2601.

2.03 Introduction

The new Tweco® Robotics Quick Robotic Light Weight Torch (QRL) offers the ideal torch for “Table Top” robots. It is designed for everyday applications that require a lighter weight and smaller profile for robotic welding torch functions.

This factor is made possible due to the combination of a notable reduction in the overall weight and size of the torch without any affect on its superior reliability and repeatability.

The Quick Robotic Light Weight Torch gives the consumer the same quality that is expected from all Tweco® Robotics QRA series torches, with close to half the weight and a significant reduction in size.

2.04 Standard Features

- Quick conductor tube lock for easy conductor tube replacement.
- 40% lighter than the QRA series torch.
- Lighter weight reduces the inertial effects on the torch head and whipping action on the power cable giving the torch more accuracy at arc initiation.
- Smaller physical profile allows greater access to confined spaces.
- Uses proven components of the QRA series.
- Uses existing conductor tubes and consumables.
- Compatible with existing mount arms.
- **OPTIONAL** - Light Weight mount arm designed for the Quick Robotic Light Weight Torch. Refer to Table 1.

| Table 1: Light Weight Mount Arms | | |
|----------------------------------|-----------|--|
| Part No. | Stock No. | Description |
| RDML - A - 180 | 3500-1460 | 180° RDM Light Weight Mount Arm |
| RDML - A - 180L | 3500-1461 | 180° (Long) RDM Light Weight Mount Arm |
| RDML - A - 22 | 3500-1462 | 22° RDM Light Weight Mount Arm |
| RDML - A - 22L | 3500-1463 | 22° (Long) RDM Light Weight Mount Arm |

QRL Air-cooled Torch Assembly

The air-cooled QRL torch assembly uses the QTR 66 series air-cooled conductor tubes. The air-cooled power cable is rated for 400 amperes with a 60% duty cycle.

- **Sold Separately** - RDML-2000-JC E-Stop Jumper Cable. This cable enables the connection of the QRL Torch to the RDM 2000 series “Tweco® Robotics Deflection Mount”.

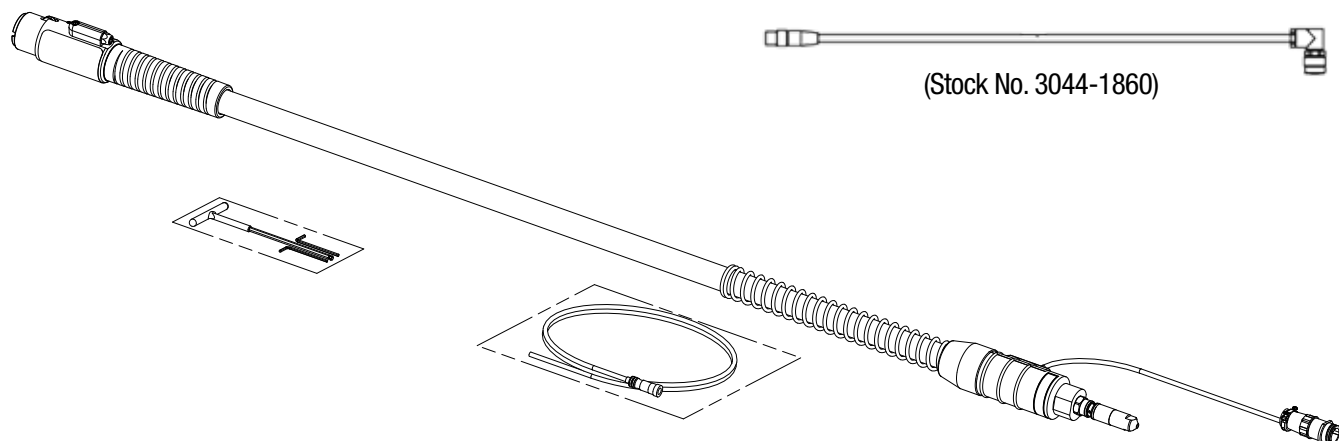


Figure 1: QRL Series “Air-cooled” Assembly

SECTION 3: INSTALLATION AND DISASSEMBLY

3.01 Installation

1. Remove the torch and cable assembly from the carton, and lay the assembly in a straight and untwisted position on a workbench or floor.
2. Check to ensure all items, shown in Figure 1 are located and identified. If any of the component parts are missing, please notify the local Tweco® Welding Distributor or Tweco® Products Customer Care Department at 1-800-426-1888.
3. Verify that the overall cable length is correct to fit between the feeder - torch mount combination.
4. Lift rubber cover to expose the conductor tube locking screw located in the torch block assembly. Insert the factory supplied 5/32" T-handle allen wrench into the locking screw and rotate counterclockwise until it stops.
5. Insert the conductor tube assembly into the torch block assembly. The conductor tube is positively located into the torch body by the use of two stainless steel alignment pins.
6. Push the conductor tube assembly into place until the locking screw can drive the back plug on the conductor tube into its locked operating position. The conductor tube has a machined locating groove around its rear diameter. This groove will be flush with the front housing when properly installed as shown in Figure 3.

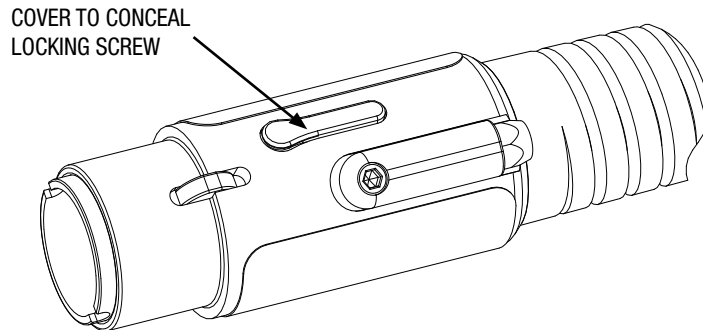


Figure 2: Conductor Tube Locking Screw

NOTE

The QRL torch and cable assemblies are furnished with a 1-5/8" (41,28mm) Ø mounting diameter and can be keyed in place into a fixture if so desired.

7. Remove the gas diffuser, tip and nozzle from the conductor tube assembly.
8. The QRL torch assemblies are furnished with R45-3545 conduit and the rear connector plugs to fit this series of conduit. If a different conduit is required, refer to Page 7-1 listing the various conduits that are available.

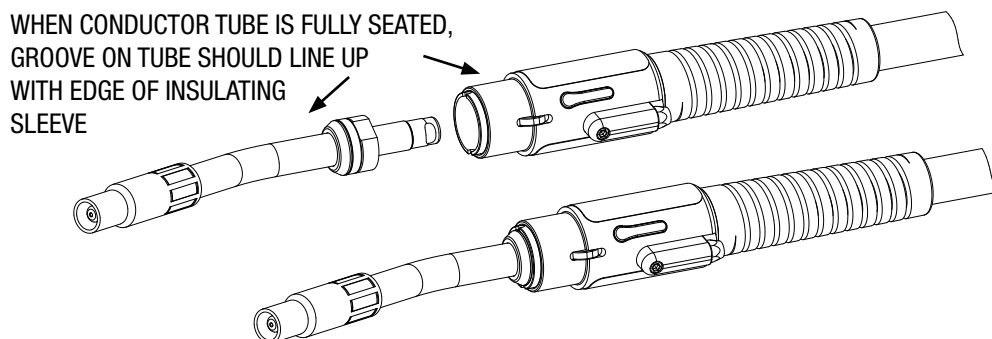


Figure 3: Conductor Tube Installation



CAUTION

Bending or distorting the conduit can cause wire feed problems.

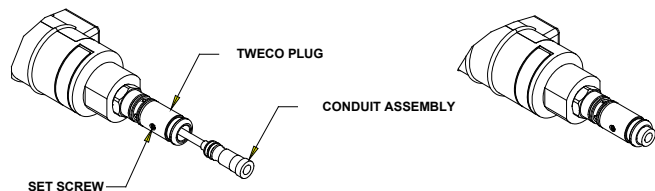


Figure 4a: Conduit Installation with Set Screw

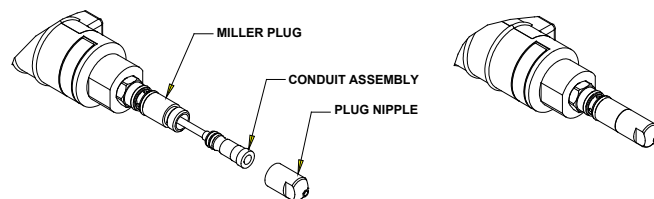


Figure 4b: Conduit Installation with Set Screw

9. Remove the conduit from the package and uncoil carefully.
10. Loosen the set screw located on the Tweco®, Panasonic®, or Lincoln® rear connector plug to ensure the conduit will feed through properly. For Miller style plug, remove the threaded connector plug nipple from the rear connector plug on the torch assembly. Refer to Figures 4A & 4B.
11. Insert the factory-supplied 5/32" T-handle allen wrench through the hole on the aluminum front handle cap, identified as "Conduit Set Screw" on the label, and rotate the set screw counterclockwise until it stops rotating (see figure 5).
12. Insert the exposed raw coil end of the conduit, factory supplied, into the rear connector plug. Feed the conduit through the gun and conductor tube assembly. If the conduit attempts to hang up, rotate the conduit liner counterclockwise while gently pushing.
13. When the conduit is completely through the torch and conductor tube assembly, seat the brass conduit stop firmly against the connector plug.
14. Tighten the set screw on the Tweco®, Panasonic®, or Lincoln® rear connector plug. For Miller style rear connector plug, re-install the threaded connector plug nipple. This connection should be wrench tight.
15. Re-insert the factory-supplied 5/32" T-handle allen wrench into the hole labeled "Conduit Set Screw" on the front handle cap and rotate the set screw clockwise. The set screw should be hand tight. Over tightening may cause wire feed ability problems (reference Figure 5 for hole location).

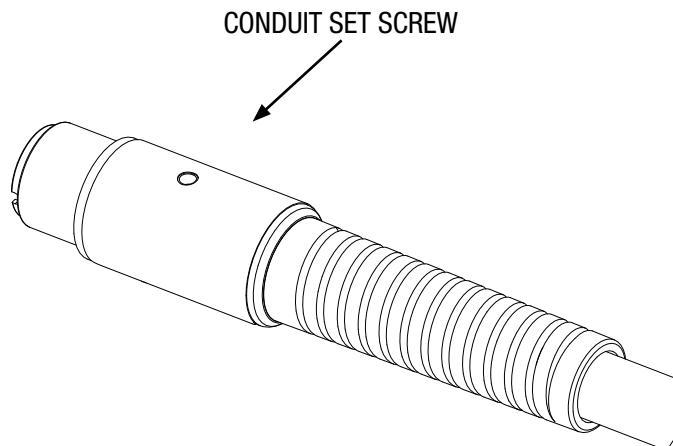


Figure 5: Access Hole for Conduit Set Screw

QUICK ROBOTICS LIGHT WEIGHT TORCH

16. Trim the conduit extending from the front of the conductor tube assembly by following the steps below:

- Method “A” – Using a tape measure or scale, mark and cut the conduit to the cut length (1 5/16”). Refer to Figure 6 — Method “A”.
- Method “B” – The diffusers have a machined groove around the outer diameter. Position the diffuser as shown in Figure 6 — Method “B” and mark and cut the conduit.

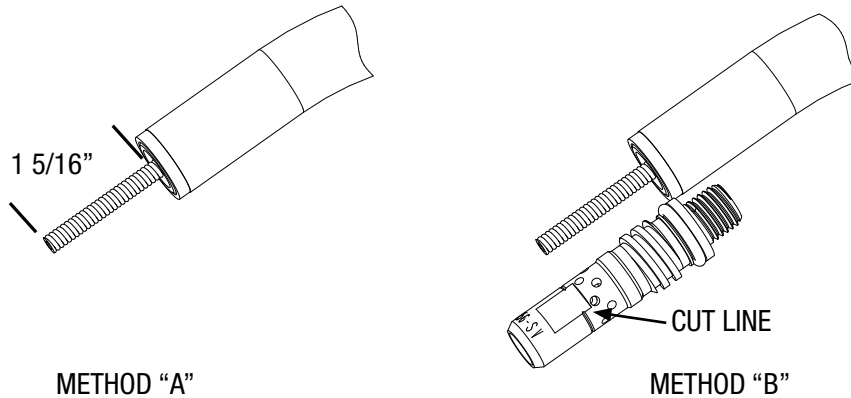


Figure 6: Conduit Cut Length

17. After trimming to length, remove any obstructions from the end of the conduit radius.
18. Re-install the diffuser, tip and nozzle onto the conductor tube assembly.
19. Loosen the fixture connection and insert the torch and conductor tube assembly into position. The key located on the torch body should be placed into the mating keyway on the fixture until it bottoms out against the fixture plate. Tighten the connection to secure the assembly in place.

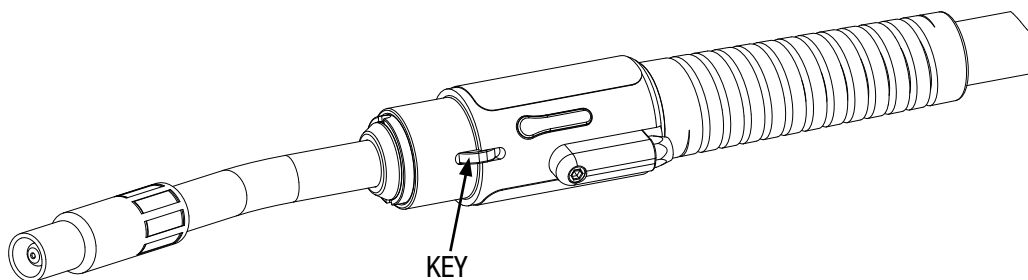


Figure 7: Locating Key

20. Install the rear connector plug into the feeder.
21. Connect the rear control cable and front e-stop jumper cable assemblies, if applicable.
22. The torch is now ready to place into operation.

3.02 Disassembly

To disassemble the torch and cable assembly from the fixture, reverse the steps noted in Section 3.01.

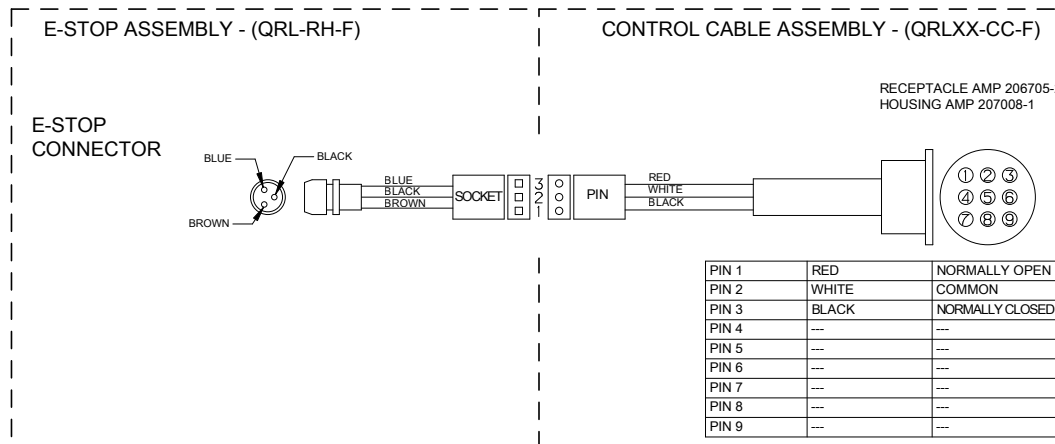
**SECTION 4:
WIRING**

The QRL torch is furnished with a receptacle housing mounted on the front case. The 3-pin socket receptacle will accept the RDML-2000-JC E-Stop Jumper Cable from the robot deflection mount.

The receptacle is connected to a 3-wire cable that runs along the inside of the inner protective jacket. The end of this cable extends approximately 1ft. (.3m) out of the rear case and comes standard with a 9-pin amp plug. Adapter jumper cables are available to connect this cable to most robots (Table 2).

| Connection | Part No. | Stock No. |
|---------------------|----------|-----------|
| Without Connector | QRJC-010 | 3045-1241 |
| Burndy (ABB) | QRJC-020 | 3045-1242 |
| 4-pin Amp (Motoman) | QRJC-030 | 3045-1243 |
| 5-pin DDK (Fanuc) | QRJC-040 | 3045-1244 |

Table 2: E-Stop Adapter Jumper Cables



Wiring Schematic for E-Stop Cable

QUICK ROBOTICS LIGHT WEIGHT TORCH

SECTION 5: MAINTENANCE

Contact tips and nozzles should be cleaned frequently. Spatter buildup may cause bridging between nozzle and tip. This could cause electrical shorting between the nozzle and work piece as well as restricting gas flow. Regularly inspect the conductor tube, torch and cable assembly for abrasions, cuts and undue wear. Replace or repair any parts as needed.

The torch and conductor tube assemblies have o-rings for seals. Lubrication of these o-rings should be done periodically and periodical inspections should be made to ensure that the o-rings do not degrade, allowing water and or shielding gas leaks to occur. When removing the conductor tube from the torch assembly, be sure the single o-ring located in the bottom of the hole remains in place.

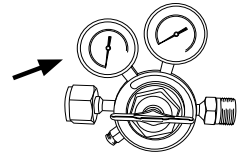


Warning!
Disconnect input power before maintaining.

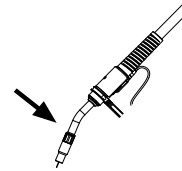
**Maintain more often
if used under severe
conditions.**

Each Use

**Visual check of
regulator and pressure**

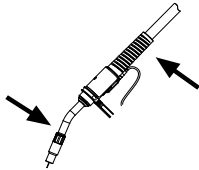


**Visual check of torch
Consumable parts**

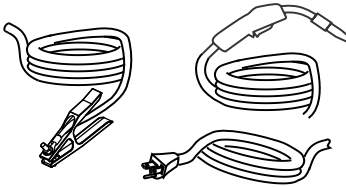


Weekly

**Visually inspect the torch
body and consumables**



**Visually inspect the
cables and leads.
Replace as needed**

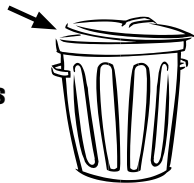


**Visually inspect the Wire
feed mechanisms**

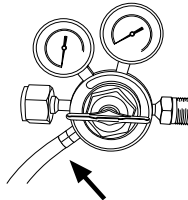


3 Months

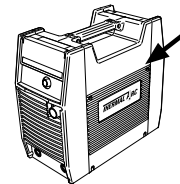
**Replace all
broken parts**



**Gas and
air lines**

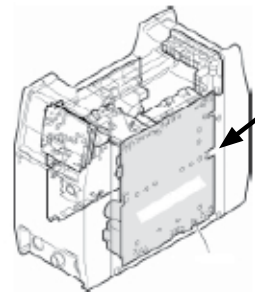
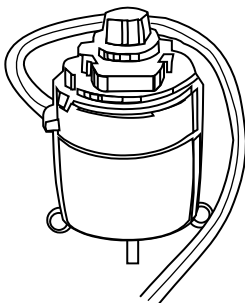


**Clean
exterior
of power supply**



6 Months

**Visually check and
use a vacuum to carefully
clean the interior**

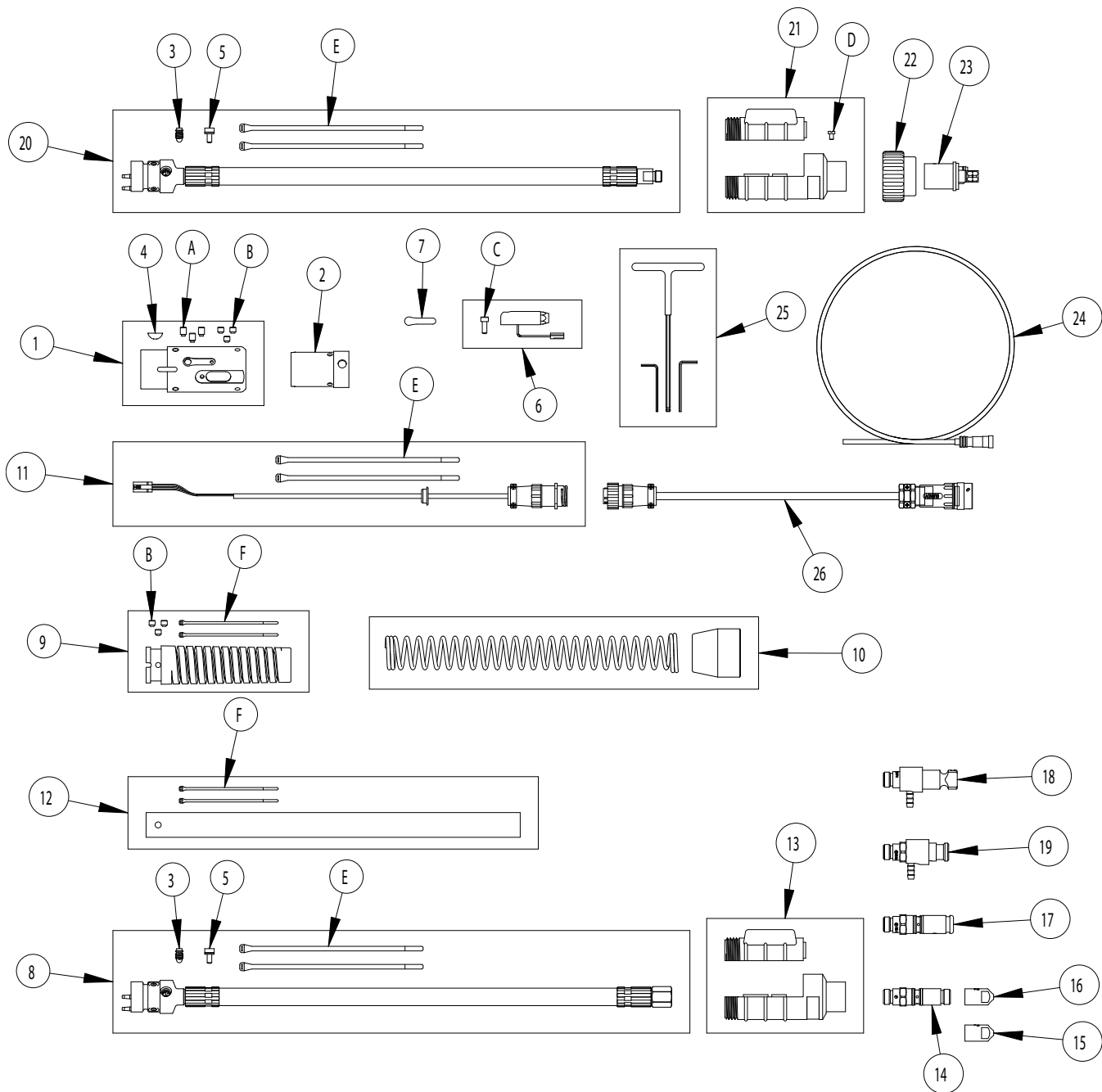


**SECTION 6:
TROUBLESHOOTING**

| Problem | Possible Cause | Corrective Action |
|--|--|--|
| Wire feed inconsistent or not smooth. | <ol style="list-style-type: none"> 1. Loose drive Rollers on feeder. 2. Dirty or plugged conduit. 3. Conduit pulled back from diffuser. 4. Sharp bends or kinks in conduit. 5. Machine improperly adjusted. 6. Spatter buildup on end of contact tip. 7. Loose contact tip or diffuser. 8. Excessively worn contact tip. 9. Loose ground cable or ground clamp. | <ol style="list-style-type: none"> 1. Tighten drive rollers. 2. Replace conduit. 3. Reposition conduit and tighten front screw. 4. Remove and replace conduit. 5. Reset machine per machine and wire manufacturers' recommendations. 6. Clean or replace contact tip. 7. Tighten contact tip and diffuser plier tight. 8. Replace contact tip. 9. Tighten or replace as required. |
| Torch and cable assembly is running hot. | <ol style="list-style-type: none"> 1. Loose power connection. 2. Loose or undersize ground cable or ground clamp. 3. Conductor tube not tight in torch block. 4. Loose contact tip or diffuser. 5. Operating torch and cable assembly above recommended amperage rating. 6. Power cable assembly damaged. 7. Restricted water flow (only QRW and QRWA series torch). | <ol style="list-style-type: none"> 1. Inspect complete torch and cable for loose connections and tighten. 2. Tighten or replace as required. 3. Tighten stainless setscrew in torch block. 4. Tighten contact tip and diffuser. 5. Readjust machine to correct setting for size of torch being used. 6. Inspect and replace accordingly. 7. Inspect water lines for any excessive bends. |
| Robot will not start. | <ol style="list-style-type: none"> 1. Deflection mount not at "home" position. 2. Check E-stop cable connection. | <ol style="list-style-type: none"> 1. Check to ensure the mount arm and mount location. 2. Check E-stop cable connection. |
| Porous weld. | <ol style="list-style-type: none"> 1. Poor or improper gas flow. 2. Moisture from torch/conductor tube. 3. Dirty or contaminated wire. 4. Base metal contamination. | <ol style="list-style-type: none"> 1. Check gas flow out of conductor tube nozzle. Check for leaks or restrictions in gas hoses and connections. 2. Check O-rings on conductor tube and torch block. Check the torch block for any scarring, gouges to the surface. 3. Change wire. 4. Replace base metal. |

QUICK ROBOTICS LIGHT WEIGHT TORCH

SECTION 7: QRL REPLACEMENT PARTS



QRL Series Replacement Parts

| Item No. | Part No. | Stock No. | Description |
|----------|-----------|-----------|--|
| 1 | QRLMS | 3045-1709 | QRL Mount Sleeve (Includes 4, A & B) |
| 2 | QRLH | 3045-1710 | QRI Case |
| 3 | QR106-RLS | 3045-1341 | Conductor Tube Locking Screw (Qty. 5) |
| 4 | QTRMS-BS | 3045-1156 | Woodruff Keys (Qty. 5) |
| 5 | QRL106S | 3045-1347 | Conduit Screw |
| 6 | QRLRH | 3045-1706 | QRL Receptacle Housing Assembly (Includes C) |
| 7 | QRLCS | 3045-1700 | Locking Screw Cover for QRL series |

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QRL Series Replacement Parts (cont.)

| Item No. | Part No. | Stock No. | Description |
|----------|------------|-----------|---|
| 8 | QRL1004PC | 3045-1702 | QRL Series Front Block & Cable (4 ft. long) (Includes 3, E & 5) |
| | QRL1006PC | 3045-1703 | QRL Series Front Block & Cable (6 ft. long) (Includes 3, E & 5) |
| 9 | QRL-SPS | 3045-1199 | Front Strain Relief Spring (Includes B & F) |
| 10 | QRLRCS | 3045-1701 | QRL Strain Relief Cap & Spring |
| 11 | QRL04CC | 3045-1704 | QRL Control Cable Assembly (4 ft. long) (Includes E) |
| | QRL06CC | 3045-1705 | QRL Control Cable Assembly (6 ft. long) (Includes E) |
| 12 | QRL04J | 3045-1707 | QRL Cable Cover (4 ft. long) (Includes F) |
| | QRL06J | 3045-1708 | QRL Cable Cover (6 ft. long) (Includes F) |
| 13 | QRA-CS | 3045-1239 | Rear Case Assembly |
| 14 | R174MH | 2035-2109 | Miller Connector Plug |
| | R176MH | 2060-2184 | Miller Connector Plug |
| 15 | R175M-N045 | 2050-2181 | Miller Plug Nipple, 0.045" (1,0mm) Wire (Use w/R176MH) |
| | R174M-N045 | 2040-2192 | Miller Plug Nipple, 0.045" (1,0mm) Wire (Use w/R174MH) |
| 16 | R175M-N116 | 2050-2182 | Miller Plug Nipple, 0.062" (1,6mm) Wire (Use w/R176MH) |
| | R174M-N116 | 2040-2191 | Miller Plug Nipple, 0.062" (1,6mm) Wire (Use w/R174MH) |
| 17 | 176S-H | 2060-2177 | Tweco® Connector Plug |
| | 350-174H | 2035-2110 | Tweco® Connector Plug (Uses R44 series Conduit) |
| 18 | QTR176LH | 2086-2624 | Lincoln Connector Plug (2.71" - 68,83mm OAL.) |
| | EL176LH | 2060-2680 | Lincoln Connector Plug (3.84" - 97,54mm OAL.) |
| 19 | 350-174PH | 2035-2172 | Panasonic Connector Plug (Uses R44 series Conduit) |
| 20 | XQRL1004PC | 3045-1395 | QRL Front Block & Cable (4 ft. long-Euro) (Includes 3, E & 5) |
| | XQRL1006PC | 3045-1396 | QRL Front Block & Cable (6 ft. long-Euro) (Includes 3, E & 5) |
| 21 | XQRA-CS | 3045-1240 | Rear Case Assembly (Includes D) |
| 22 | 174X-2S | 2040-2177 | Euro-Kwik Nut |
| 23 | E171-1TS | 2011-2172 | Euro-Kwik Adapter |
| 24 | -- | -- | Conduit (Refer to page 7-1) |
| 25 | QTR-TOOLS | 2062-2034 | Tool Kit |
| 26 | -- | -- | E-stop Jumper Cable Assembly |
| | QRJC-010 | 3045-1241 | Without Connector - 3 ft. (91cm) Long |
| | QRJC-020 | 3045-1242 | With Burndy Connector - 3 ft. (91 cm) Long |
| | QRJC-030 | 3045-1243 | With 4-pin Amp Connector - 3 ft. (91 cm) Long |
| | QRJC-040 | 3045-1244 | With 5-pin DDK Connector - 3 ft. (91 cm) Long |

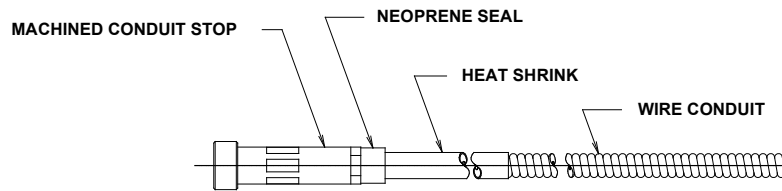
Standard Non-Sellable Parts

These standard parts are not sellable items and should be purchased at a local hardware or fastener supplier.

| Item No. | Description |
|----------|---|
| A | 1/4 - 20 x 3/8 Half Dog Point Set Screw |
| B | 1/4 - 20 x 1/4 Flat Point Socket Head Set Screw |
| C | 10 - 32 x 1/2 SS Socket Head Cap Screw |
| D | M4 x 0.7 x 5.9 Cheese Head Screw |
| E | 7.6L x 0.190W Cable Tie Panduit CBR2S |
| F | 4.1L x 0.098W Cable Tie Panduit CBR1M |

QUICK ROBOTICS LIGHT WEIGHT TORCH

SECTION 8: CONDUIT LINERS



R45 SERIES CONDUITS

STEEL WELDING WIRE

| Wire Size | Part No. Stock No. | Length |
|---|--------------------------|--------------------------------------|
| .035 ⁱⁿ / .045 ⁱⁿ 0.9 ^{mm} / 1.2 ^{mm} | R45-3545-1 1450-1023 | 1 ^{ft} .3 ^m |
| .035 ⁱⁿ / .045 ⁱⁿ 0.9 ^{mm} / 1.2 ^{mm} | R45-3545-4 1450-1024 | 4 ^{ft} 1.2 ^m |
| .035 ⁱⁿ / .045 ⁱⁿ 0.9 ^{mm} / 1.2 ^{mm} | R45-3545-8 1450-1025 | 8 ^{ft} 2.4 ^m |
| .035 ⁱⁿ / .045 ⁱⁿ 0.9 ^{mm} / 1.2 ^{mm} | R45-3545-15 1450-1026 | 15 ^{ft} 4.6 ^m |
| .052 ⁱⁿ / 1/16 ⁱⁿ 1.53 ^{mm} / 1.6 ^{mm} | R45-116-1 1450-1028 | 1 ^{ft} .3 ^m |
| .052 ⁱⁿ / 1/16 ⁱⁿ 1.53 ^{mm} / 1.6 ^{mm} | R45-116-4 1450-1029 | 4 ^{ft} 1.2 ^m |
| .052 ⁱⁿ / 1/16 ⁱⁿ 1.53 ^{mm} / 1.6 ^{mm} | R45-116-8 1450-1030 | 8 ^{ft} 2.4 ^m |
| .052 ⁱⁿ / 1/16 ⁱⁿ 1.53 ^{mm} / 1.6 ^{mm} | R45-116-15 1450-1031 | 15 ^{ft} 4.6 ^m |

ALUMINUM WELDING WIRE

| Wire Size | Part No. Stock No. | Length |
|--|----------------------------|--------------------------------------|
| .035 ⁱⁿ / .045 ⁱⁿ 0.9 ^{mm} / 1.2 ^{mm} | R45WN-3545-4 1450-1041 | 4 ^{ft} 1.2 ^m |
| .035 ⁱⁿ / .045 ⁱⁿ 0.9 ^{mm} / 1.2 ^{mm} | R45WN-3545-8 1450-1042 | 8 ^{ft} 2.4 ^m |
| .035 ⁱⁿ / .045 ⁱⁿ 0.9 ^{mm} / 1.2 ^{mm} | R45WN-3545-15 1450-1043 | 15 ^{ft} 4.6 ^m |
| 1/16 ⁱⁿ 1.6 ^{mm} | R45WN-116-8 1450-1044 | 8 ^{ft} 2.4 ^m |
| 1/16 ⁱⁿ 1.6 ^{mm} | R45WN-116-15 1450-1045 | 15 ^{ft} 4.6 ^m |

NOTE

Part/Stock numbers with a (WN) reference signify "Wire, Nylon Wrapped".

**SECTION 9:
FACTORY REPAIR CENTER**

Tweco® Robotics Factory Repair Center (FRC) offers a repair service for our customers on the various cable assemblies and peripheral products. The majority of our consumers do not want to spend the time involved with repairs and generally do not have the necessary equipment and tools to perform repairs.

Other key benefits in considering the “FRC” service repairs on your product:

- All products will be rebuilt and tested following the established test procedures and specifications for the specific product.
- All repairs are done using original Tweco® Robotics parts to ensure maximum product performance.
- Our FRC has highly-trained employees utilizing the appropriate tools and test equipment.
- 30-day warranty on the newly installed parts and labor on all cable assemblies.
- 30-day warranty on QRM-100, QRM-3 and RDM-2000 peripherals.
- 60-day warranty on QRC-2000 and QWT-120 peripherals.

Factory Repair Center

Domestic Toll Free Phone Number: 1-800-426-1888

Fax Number: 1-620-229-9926

QUICK ROBOTICS LIGHT WEIGHT TORCH

Statement of Warranty

LIMITED WARRANTY: THERMADYNE® warrants that its products will be free of defects in workmanship or material. Should any failure to conform to this warranty appear within the time period applicable to the THERMADYNE products as stated below, THERMADYNE shall, upon notification thereof and substantiation that the product has been stored, installed, operated, and maintained in accordance with THERMADYNE's specifications, instructions, recommendations and recognized standard industry practice, and not subject to misuse, repair, neglect, alteration, or accident, correct such defects by suitable repair or replacement, at THERMADYNE's sole option, of any components or parts of the product determined by THERMADYNE to be defective.

THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

LIMITATION OF LIABILITY: THERMADYNE shall not under any circumstances be liable for special or consequential damages, such as, but not limited to, damage or loss of purchased or replacement goods, or claims of customers of distributor (hereinafter the "Purchaser") for service interruption. The remedies of the Purchaser set forth herein are exclusive and the liability of THERMADYNE with respect to any contract, or anything done in connection therewith such as the performance or breach thereof, or from the manufacture, sale, delivery, resale, or use of any goods covered by or furnished by THERMADYNE whether arising out of contract, negligence, strict tort, or under any warranty, or otherwise, shall not, except as expressly provided herein, exceed the price of the goods upon which such liability is based.

THIS WARRANTY BECOMES INVALID IF REPLACEMENT PARTS OR ACCESSORIES ARE USED WHICH MAY IMPAIR THE SAFETY OR PERFORMANCE OF ANY THERMADYNE PRODUCT.

THIS WARRANTY IS INVALID IF THE PRODUCT IS SOLD BY NON-AUTHORIZED PERSONS.

This warranty is effective for the time stated in the Warranty Schedule beginning on the date that the authorized distributor delivers the products to the Purchaser.

Warranty repairs or replacement claims under this limited warranty must be submitted by an authorized THERMADYNE repair facility within thirty (30) days of the repair. No transportation costs of any kind will be paid under this warranty. Transportation charges to send products to an authorized warranty repair facility shall be the responsibility of the Purchaser. All returned goods shall be at the Purchaser's risk and expense. This warranty supersedes all previous THERMADYNE warranties.

WARRANTY SCHEDULE

The warranty is effective below for the time stated in the Warranty Schedule beginning on the date that the authorized distributor delivers the products to the purchaser. THERMADYNE® reserves the right to request documented evidence of date of purchase.

| Engine Driven Welders | Parts / Labor |
|--|---|
| Scout®, Raider®, Explorer™ | |
| Original Main Power Stators and Inductors | 3 years / 3 years |
| Original Main Power Rectifiers, Control P.C. Boards | 3 years / 3 years |
| All Other Original Circuits and Components Including, but not Limited to, Relays, Switches, Contactors, Solenoids, Fans, Power Switch Semi-Conductors | 1 year / 1 year |
| Engines and Associated Components are NOT Warranted by Thermal Arc®, Although Most are Warranted by the Engine Manufacturer. SEE THE ENGINE MANUFACTURERS' WARRANTY FOR DETAILS. | See the Engine Manufacturers' Warranty for Details |
| GMAW/FCAW (MIG) Welding Equipment | Parts / Labor |
| Fabricator® 131, 181, 190, 210, 251, 281; Fabstar® 4030; PowerMaster® 350, 350P, 500, 500P; Excel-Arc® 6045; Wire Feeders: Ultrafeed®, Porta-feed® | |
| Original Main Power Transformer and Inductor | 5 years / 3 years |
| Original Main Power Rectifiers, Control P.C. Boards, Power Switch Semi-Conductors | 3 years / 3 years |
| All Other Original Circuits and Components Including, but not Limited to, Relays, Switches, Contactors, Solenoids, Fans, Electric Motors | 1 year / 1 year |
| GTAW (TIG) & Multi-process Inverter Welding Equipment | Parts / Labor |
| 160TS, 300TS, 400TS, 185AC/DC, 200AC/DC, 300AC/DC, 400GTSW, 400MST, 300MST, 400MSTP | |
| Original Main Power Magnetics | 5 years / 3 years |
| Original Main Power Rectifiers, Control P.C. Boards, Power Switch Semi-Conductors | 3 years / 3 years |
| All Other Original Circuits and Components Including, but not Limited to, Relays, Switches, Contactors, Solenoids, Fans, Electric Motors | 1 year / 1 year |
| Plasma Welding Equipment | Parts / Labor |
| Ultima® 150 | |
| Original Main Power Magnetics | 5 years / 3 years |
| Original Main Power Rectifiers, Control P.C. Boards, Power Switch Semi-Conductors | 3 years / 3 years |
| Welding Console, Weld Controller, Weld Timer | 3 years / 3 years |
| All Other Original Circuits and Components Including, but not Limited to, Relays, Switches, Contactors, Solenoids, Fans, Electric Motors, Coolant Recirculators | 1 year / 1 year |
| SMAW (Stick) Welding Equipment | Parts / Labor |
| Dragster™ 85 | |
| Original Main Power Magnetics | 1 year / 1 year |
| Original Main Power Rectifiers, Control P.C. Boards | 1 year / 1 year |
| All Other Original Circuits and Components Including, but not Limited to, Relays, Switches, Contactors, Solenoids, Fans, Power Switch Semi-Conductors | 1 year / 1 year |
| 160S, 300S, 400S | |
| Original Main Power Magnetics | 5 years / 3 years |
| Original Main Power Rectifiers, Control P.C. Boards | 3 years / 3 years |
| All Other Original Circuits and Components Including, but not Limited to, Relays, Switches, Contactors, Solenoids, Fans, Power Switch Semi-Conductors | 1 year / 1 year |
| General Arc Equipment | Parts / Labor |
| Water Recirculators | 1 year / 1 year |
| Plasma Welding Torches | 180 days / 180 days |
| Gas Regulators (Supplied with Power Sources) | 180 days / NA |
| MIG and TIG Torches (Supplied with Power Sources) | 90 days / NA |
| Replacement Repair Parts | 90 days / NA |
| MIG, TIG and Plasma Welding Torch Consumable Items | NA / NA |
| Gas Welding and Cutting Equipment | Parts / Labor |
| Victor® Professional | 5 years / NA |
| Oxygen Conservers | 2 years / NA |
| Aluminum Cylinders | Lifetime / NA |
| Cutting Machine Motors | 1 year / NA |
| HP&I Brass Regulators/Manifolds | 2 years / NA |
| HP&I Stainless Regulators/Manifolds | 1 year / NA |
| HP&I Corrosive Gas Regulators/Manifolds | 90 days / NA |
| TurboTorch® | 3 years / NA |
| CutSkill® | 2 years / NA |
| Steel Cylinders | 1 year / NA |
| Victor Medical | 6 years / NA |
| Victor VSP | 2 years / NA |
| Firepower® MIG Welders | 5-2-1 years / NA |
| Transformers | 5 years / NA |
| Parts Used in Rental Applications | 1 year from date sold by seller to authorized distributor |
| MIG Torches and Arc Accessories | Parts / Labor |
| Arcair® N6000 | 90 days / NA |
| Eliminator® Spool and Pull Guns | 90 days / NA |
| Robotic Deflection Mounts | 90 days / NA |
| QRM-100 Anti-Spatter Applicator | 90 days / NA |
| TC and TCV Water Coolers | 1 year / NA |
| TSC-96 Smoke Collector | 1 year / NA |
| ESG-1, EPG-CR1, EPG-CR2 Control Boxes for Eliminator Spool & Pull Guns | 1 year / NA |
| QRC-2000 Nozzle Cleaning Stations | 1 year / 1 year |
| All other products 30 days from date purchaser purchases from seller. | 30 days / NA |
| Plasma Cutting Systems | Parts / Labor |
| Automated Plasma | 2 years / 1 year |
| CutMaster™ | 3 years / 3 years |
| PakMaster® XL PLUS | 3 years / 1 year |
| Drag-Gun® | 1 year / 1 year |
| Drag-Gun Plus | 2 years / 1 year |
| Torches | 1 year / 1 year |
| Consoles, Control Equipment, Heat Exchangers and Accessory Equipment | 1 year / 1 year |



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